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CARCINOMA OF THE PROSTATE

A STUDY OF THE PERCENTAGE OF CASES SUITABLE FOR THE RADICAL OPERATION

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BALTIMORE

In an editorial [1] published in THE JOURNAL in July 1942 I was quoted—and quoted correctly—as stating that of all cases diagnosed as carcinoma of the prostate in the Brady Urological Institute the radical operation was carried out in approximately 5 per cent. This question was raised in a discussion at a meeting of the New England branch of the American Urological Association, and without any available figures, in a desire to be conservative, I gave my impression that about 5 per cent of all cases of carcinoma of the prostate seen in any clinic would be found suitable for the radical operation.[2]

The publication of the aforementioned editorial, and particularly my statement, which was given purely as an impression and without the background of any statistical data, led me to make a study with as thorough a follow-up as possible to determine the end results of all cases in which the radical operation for carcinoma of the prostate was done in the Brady Urological Institute between Sept. 1, 1937 and Sept. 1, 1942. In this five year period a diagnosis of carcinoma of the prostate was made in 358 cases, of which 318 were admitted to the hospital. During this period 73 radical operations were performed by members of the visiting and house staffs. Thus the radical operation was carried out in 20.2 per cent of all cases seen and in 22.7 per cent of all hospital admissions with a diagnosis of carcinoma of the prostate (table 1).

These figures were so significant that it was deemed advisable to present them to the medical profession. I realize that this percentage of cases suitable for the radical operation is probably higher than would be seen in other clinics, but it can be explained by the fact that many patients are referred to this clinic with a diagnosis of early carcinoma for the express purpose of undergoing the radical operation.

In a similar series studied over a period of two years at the University of Virginia Hospital, Vest and Prince [3] made a diagnosis of carcinoma of the prostate in 77 cases. Of these, 7 cases, or 9 per cent, were considered suitable for the radical operation with a good prognosis for complete cure.

The criteria for cases suitable for the radical operation have been previously stated and depend largely on careful rectal examination.[4] The malignant growth should not extend beyond the capsule of the gland, into the membranous urethra or beyond the base of the seminal vesicles, and, of course, metastases must not be demonstrable either on physical or on roentgenologic examination. In addition, the serum acid and basic phosphatase must be within normal limits, since the important researches of Huggins and his collaborators [5] and the Gutmans [6] have shown that an elevated acid phosphatase level in the blood serum should be interpreted as indicative of metastases from prostatic carcinoma unless some other definite cause for this elevation can be proved. Furthermore, no patient should be subjected to the radical operation unless the general physical condition is satisfactory, and the patient should have a fair span of life expectancy. Generally speaking, carcinoma of the prostate, especially in older persons, is a slowly progressive disease, and in every case in which the criteria for operability are satisfactory the question of life expectancy of the particular person must be carefully considered before operation is advised.

These criteria are not absolute, and in some cases radical operation has been carried out on persons in whom it seemed doubtful from the observations on rectal examination that a complete cure might be expected. George Gilbert Smith [7] some years ago advocated the radical operation in cases in which it was obvious that the whole malignant growth could not be removed, but he felt that even though some of the neoplasm might remain, usually in the region of the tips of the seminal vesicles, the patient's subsequent course was much more satisfactory than with any other method of treatment. The removal of the main mass of malignant disease around the neck of the bladder gave permanent relief of obstructive symptoms and effects, and in many cases the portion of the tumor which could not be removed, lying as it did well above the neck of the bladder, between it and the rectal wall,

From the Brady Urological Institute of the Johns Hopkins Hospital.

1. Carcinoma of the Prostate, editorial, J. A. M. A. **119:** 950-951 (July 18) 1942.

2. Colston, J. A. C.: The Surgical Treatment of Carcinoma of the Prostate, New England J. Med. **223:** 205-212 (Aug. 8) 1940.

3. Vest, S. A., and Prince, C. L.: Personal communication to the author.

4. Young, H. H.: The Radical Cure of Cancer of the Prostate, Surg., Gynec. & Obst. **64:** 472-482 (Feb. 15) 1937; Surgery in Cancer of the Prostate, J. A. M. A. **119:** 669 (June 20) 1942.

5. Huggins, Charles; Stevens, R. E., and Hodges, C. V.: Studies on Prostatic Cancer: II. The Effects of Castration on Advanced Carcinoma of the Prostate Gland, Arch. Surg. **43:** 209-223 (Aug.) 1941. Huggins, Charles; Scott, W. W., and Hodges, C. V.: Studies on Prostatic Cancer: III. The Effects of Fever, of Desoxycorticosterone and of Estrogen on Clinical Patients with Metastatic Carcinoma of Prostate, J. Urol. **46:** 997-1006 (Nov.) 1941.

6. Gutman, A. B.: Serum "Acid" Phosphatase in Patients with Carcinoma of the Prostate Gland: Present Status, J. A. M. A. **120:** 1112-1116 (Dec. 5) 1942.

7. Smith, G. G.: Total Perineal Prostatectomy for Carcinoma, J. Urol. **35:** 610-617 (June) 1936; Total Perineal Prostatectomy, Pennsylvania M. J. **44:** 1391-1401 (Aug.) 1941; Surgery for Cancer of the Prostate, J. A. M. A. **118:** 1514 (April 25) 1942.

might grow very slowly and not cause symptoms from its encroachment on either the bladder or the rectum. The following case illustrates this point very graphically:

REPORT OF CASE

D. D. McM., aged 51, seen in June 1924, complained of burning on urination, frequency and blood in the urine. The general physical examination was essentially normal, except for mild hypertension. On rectal examination the prostate was slightly broader and undoubtedly firmer than normal, and in the right lobe there was an elevated, stony hard, fixed nodule and the induration extended up toward the base on the right side but apparently not into the seminal vesicle. X-ray examinations of the lumbar vertebrae, sacrum and bones of the pelvis were negative for metastases. Since the growth seemed to be entirely within the capsule of the prostate and had not extended into the membranous urethra or into the seminal vesicles, the case was considered suitable for radical operation. This procedure was carried out on July 2. The postoperative course was uneventful, except for a transient epididymitis. The patient was discharged on August 5, the perineal wound well healed, voiding freely without obstruction, with perfect control, able to retain urine throughout the night without arising and voiding every three hours during the day. He was seen at intervals following the operation and remained in excellent general condition with a perfect functional result. In June 1927, three years after the operation, an indurated area was noted high up between the rectum and the posterior wall of the bladder. In subsequent check-up examinations it was observed that this area grew very slowly and that the induration became gradually more pronounced. At the last examination, carried out in 1931, it was my impression that a definite recurrence was present. At no time had there been any urinary obstruction or other symptoms, and the functional result remained perfect. X-ray examinations showed no evidence of metastases. His general health had been good except for an attack of acute cholecystitis, for which a cholecystectomy was done in January 1928. He died on March 25, 1939 with a clinical diagnosis of coronary thrombosis. A complete autopsy was carried out by Dr. Nathan B. Friedman, then of the University of Chicago, who sent the indurated retrovesical mass to me for examination. Autopsy showed no evidence of metastases. The prostate was absent. Under the bladder the extremities of the vesicles were fused together in a firm mass 5 by 3 cm., most of which was on the right. On section this mass showed a group of thick walled tubules embedded in scar tissue. One region showed dilated cystic spaces up to 1 cm., each with reddish and yellow contents. Microscopic examination revealed the right seminal vesicle thickened and fibrotic with hyaline and mucoid interstitial changes and vascular sclerosis. The epithelium of the vesicle was relatively normal, although atrophic and desquamated in areas. Throughout the stroma and invading the nerves at the edges were numerous well differentiated adenocarcinomatous glandular structures.

TABLE 1.—*Percentage of Cases Suitable for Radical Operation Among All Cases Diagnosed as Carcinoma of the Prostate from Sept. 1, 1937 Through Aug. 31, 1942*

	Number of Patients	Number of Radical Operations	Per Cent
Diagnosis: carcinoma of prostate.....	358	73	20.2
Admissions to hospital.....	318	73	22.7

It is obvious that the upper portion of the right seminal vesicle was not removed at the time of operation. It was probably invaded by the malignant process at the time of operation, but the neoplasm progressed so slowly that it never caused any functional disability by pressure on contiguous structures, located as it was between the posterior vesical wall and the rectum, well above the neck of the bladder. This patient lived fifteen years completely free from urinary symptoms and with a perfect functional result, even though viable malignant cells were present behind the bladder wall during all this time.

OPERATIVE MORTALITY

During the period from Sept. 1, 1937 to Sept. 1, 1942 seventy-three radical operations were performed and there were four hospital deaths. An analysis of these fatalities shows that 3 patients were over 70, and in all of them evidences of varying degrees of arteriosclerotic cardiovascular disease were found. In 2 of them the cause of death was myocardial failure, and in the third a massive hemorrhage from unrecognized gastric ulcers was considered responsible for death, although here again myocardial disease was a contributing factor. The fourth death occurred from what must be considered a technical error in that, owing to a suspected occlusion of the ureter occurring at operation, it was thought necessary to insert a retained ureteral catheter, which was in all probability the source of a fatal staphylococcic bacteremia which developed.

It is an interesting commentary on the supposed danger of the radical operation that during the five year period fifteen such operations have been carried out by the various resident urologists of the Brady clinic without a death. This series, comprising as it does only a five year postoperative follow-up, is in no sense intended as a presentation of the percentage of cures following radical operation. It must be remembered that the study was undertaken primarily to determine the percentage of cases considered suitable for the radical operation from the total number of cases seen in the clinic over a five year period in which a diagnosis of carcinoma of the prostate was made. In this connection Lewis [8] made a study of the five year end results of the radical operation and found that approximately 50 per cent of the patients subjected to this procedure were alive and well without evidence of recurrence or metastasis more than five years after the operation.

In the present series of 69 patients who left the hospital after the operation, 10 have died from recurrence or metastasis, 11 are known to be alive with metastasis or recurrence or both, and 48 are living without evidence of recurrence or metastasis in periods ranging from six months to five years after the operation (table 2).

TABLE 2.—*Mortality and Immediate Results of Radical Operation for Carcinoma of Prostate (1937-1942)*

Radical operation.....	73
Hospital deaths.....	4 (5.5%)
Died, recurrence or metastasis.....	10
Living, recurrence or metastasis.....	11
Living, no evidence of recurrence or metastasis.....	48

RELATION OF GOOD PREOPERATIVE PROGNOSIS TO THE ULTIMATE RESULT

As has been previously stated, the preoperative prognosis, as far as the curability of the disease is concerned, is based entirely on careful rectal examination, provided,

8. Lewis, L. G.: Carcinoma of the Prostate: Young's Radical Perineal Prostatectomy, J. Urol. **47**: 302-305 (March) 1942.

of course, that no evidences of metastases are present, either clinically or roentgenologically. It has been the custom in the Brady Urological Institute for the examiner to state his impression, good or poor, from his observations on rectal examination. The sources of error lie in the extent of the disease, which may be impossible to recognize accurately on rectal palpation, and from the individual interpretation of the examiner. However, with these limitations in mind, from the preoperative examination in the 69 operative cases in which the clinical diagnosis was cancer the prognosis was classed good in 43 and poor in 26. Of the 43 patients with a good prognosis 41 are living and well without evidence of recurrence or metastasis, 1 has died from recurrence or metastasis and 1 has died from heart disease.

Of the 26 patients with cancer the extent of which caused the examiner to call the prognosis poor, 8 are living and well without evidence of recurrence or metastasis, 9 are living with evidence of either recurrence or metastasis, 8 have died from either recurrence or metastasis and 1 has died from other causes (table 3).

From a glance at these figures it is obvious that a good clinical preoperative prognosis is an important factor in the ultimate result; but it is equally evident

TABLE 3.—*Cases Classified as Good or Poor Prognosis for Ultimate Cure: A Comparison of Results*

Preoperative Prognosis	Number of Cases	Living and Well, No Evidence of Recurrence or Metastasis	Living and Well, with Evidence of Recurrence or Metastasis	Dead, Recurrence or Metastasis	Dead, Other Causes
Good	43	41	0	1	1
Poor	26	8	9	8	1

that patients classified under a fair or poor prognosis must not all be denied the opportunity for complete eradication of the disease which the radical operation affords, because 8 out of 26 patients with a poor prognosis are living and well without evidence of recurrence or metastasis. The excellent temporary results, often of surprisingly long duration, that may be obtained by eradication of the main mass of malignant disease in cases in which it is evident that complete removal of all the neoplasm is impossible have already been stressed.

FUNCTIONAL RESULTS

There has, unfortunately, been an all too prevalent idea among both the general medical profession and some urologists who are not familiar with the operation that total incontinence of urine is an inevitable result of the radical operation. It might be argued that, even though this were so, if a complete cure of the malignant disease could be obtained a life of complete incontinence would be distinctly preferable to death from prostatic cancer, with its certain disability and suffering (table 4).

Incontinence of urine following the radical operation, in many instances at least, must be attributed to the sutures which anastomose the stump of the urethra to the neck of the bladder. The distal stump of the urethra contains the muscles of the external sphincter, and it is easy to understand that these structures may be constricted and their continuity severed by sutures tied directly through them. In 1940 Vest [9] described his method of completing the anastomosis, which, briefly, depends on the principle of passing the anastomosing sutures out through the structures of the perineum and tying them there. By this method a snug approximation of the stump of the urethra to the neck of the bladder can be obtained, and no knots are tied directly over the muscles of the external sphincter, so that the suture

TABLE 4.—*Urinary Control: Results on Leaving Hospital or at Last Report*

Good control	50
Fair control	11
Poor control	8
Total number of cases	69

knot is cushioned by the soft tissues of the perineum. Since the introduction of this principle in the Brady clinic, the functional results have been appreciably improved (table 5).

The patients who survived operation and left the hospital have been classified with regard to urinary function as good, fair and poor. Under the first heading are classed those patients who are able to void freely without difficulty or obstruction or undue frequency and in whom urinary control has been retained to such a degree that no apparatus is necessary, either day or night. Under fair are classified those patients who have good control at night but when up and about dribble small amounts of urine at times, so that an apparatus is necessary at least part of the time. These patients are able to void freely without obstruction and the functional result is excellent except for the inability at times to control small amounts of urine. Under poor are classified those patients who have little or no control and require some form of apparatus both day and night. A good functional result can almost invariably be expected in the younger age group.

MISTAKES IN DIAGNOSIS

The operative specimen in 5 cases on microscopic examination failed to reveal evidences of malignant disease. In 3 of these cases fibrosclerotic areas which occurred in the posterior capsule were mistaken clini-

TABLE 5.—*Urinary Control Since 1940, Since When the Modified Suture Technic Has Been Used in All Cases*

Control good	30
Control fair	4
Control poor	3
Total number of cases	37

cally for malignant disease. All these patients had varying degrees of urinary obstruction and all recovered from the operation with a good functional result. In 1 case microscopic study showed that a large area of infarction had occurred in the prostate which clinically was considered to be carcinoma. In the fifth case microscopic sections of the operative specimen showed tuberculosis which had been mistaken clinically for malignant disease. This patient had symptoms of urinary obstruction, there were no other evidences of tuberculosis of the urinary tract and, following operation, healing was uneventful with an excellent functional result.

9. Vest, S. A.: Radical Perineal Prostatectomy: Modification of Closure, Surg., Gynec. & Obst. **70**: 935-937 (May) 1940.

It should be an invariable rule that the clinical diagnosis should be confirmed at the operating table by a frozen section of the suspected area. This procedure is quite simple, and a satisfactory piece can be removed from any portion beneath the posterior capsule with the cautery knife without fear of disseminating malignant cells throughout the wound. The time required to prepare and study the section can be utilized in mobilizing the prostate and exposing it satisfactorily in preparation for the radical operation. If the section proves to be benign, the incision can be rapidly closed, and only a few days hospitalization is necessary, since, of course, the urinary tract is not opened.

The brilliant results which have been obtained by the endocrine control of carcinoma of the prostate, either by orchiectomy,[10] introduced by Huggins, or by the administration of female sex hormone,[11] have raised the question in some minds whether the radical operation in early cases of this disease is ever justified.

The regression of bony and even pulmonary metastases [12] and the diminution in the size of the local growth, with relief of urinary symptoms even in extensive neoplastic disease are incontestable, and the results in the Brady Urological Institute in the treatment of these cases have fully confirmed the observations of Huggins. However, the ultimate fate of these patients, who may show a remarkable and prompt response to this method of treatment, is as yet unknown, since none of these cases have been followed over a sufficiently long period of time to make certain that the regression of the primary growth and metastases are permanent. Decided improvement persisting over varying periods of time up to a year may be followed by a gradual return of the symptoms and evidences of activity of the disease, which cannot be controlled by further treatment with the female sex hormone.

Randall [13] has recently reported 5 cases of extensive carcinoma of the prostate in which bilateral orchiectomy was done seven, eight and nine years ago. Four of his patients died forty-three days, eight months, seventeen months and three and one-half years respectively after the operation. One is living six and one-half years after the operation, but x-ray examination shows massive metastases of the dorsolumbar spine, which have apparently been ameliorated by the use of diethylstilbestrol. Evidence has not been adduced to prove, therefore, that complete eradication of carcinoma of the prostate can be obtained by endocrine treatment, but the palliative results which are observed in approximately 80 per cent of the cases, even with extensive metastases, must be received without question. Some writers have contended that, on account of the early involvement of the perineural lymphatics,[14] carcinoma of the prostate can never be completely removed by surgical operation. Carcinoma in other locations throughout the body also has a tendency to invade lymphatics, so that, if this contention was followed to a logical conclusion, an effort to remove a carcinoma anywhere in the body would not be justifiable.

It is the feeling, therefore, in the Brady Urological Institute that any patient with an early carcinoma of the prostate who fulfils the necessary criteria for the radical operation should have the benefit of this procedure. As far as our present knowledge goes, this operation in certain selected cases offers the only possibility for complete eradication of the disease.[15]

COMMENT

A study of the radical operations for carcinoma of the prostate performed in the Brady Urological Institute by various operators during the five year period from Sept. 1, 1937 to Sept. 1, 1942 has been carried out. This study has been undertaken to determine the percentage of cases suitable for the radical operation out of the total number of cases seen in the clinic in which a diagnosis of carcinoma of the prostate was made. The study, of course, in no way attempts to evaluate the five year percentage of cures, but the subsequent course of the patients subjected to the radical operation has been followed as closely as possible, with special reference to recurrence and metastasis and to the functional result.

There were four hospital deaths in the series of seventy-three operations—a mortality of 5.5 per cent. These fatalities have been summarized and analyzed. The importance of a good preoperative prognosis for complete cure of the disease has been emphasized. Of 43 patients for whom the prognosis was good, 41 are living and well without evidence of recurrence or metastasis. Of 26 patients for whom the prognosis was poor, 8 are living and well at intervals varying from three months to five years.

Intensive follow-up of all patients with early cancer of the prostate subjected to Young's radical operation shows that more than 50 per cent are free from recurrence or metastasis from five to twenty-seven years after leaving the hospital. A study of the postoperative functional results has also been carried out on the 69 patients who comprise this series. In 49 the functional result was excellent, all patients having complete urinary control. The result was classified as fair in 11 cases in which there was occasional slight leakage during the day, and in 8 the result was evaluated as poor, as some form of apparatus was necessary during the day and in some instances during the night. It is important to complete the anastomosis between the neck of the bladder and the stump of the urethra by means of sutures introduced so that there will be no strangulation and subsequent necrosis and scarring of the muscles of the external sphincter. It is evident that sutures tied in such a way as to constrict the sphincter muscles must play a large part in the incidence of postoperative incontinence.

Frozen section biopsy, carried out with the patient prepared for the radical operation, is a simple means of avoiding mistakes in diagnosis.

1201 North Calvert Street.

10. Nesbit, R. M., and Cummings, R. H.: Prostatic Carcinoma Treated by Orchiectomy: A Preliminary Report Based on Seventy-Five Cases Observed for at Least Six Months Following Operation, J. A. M. A. **120:** 1109-1111 (Dec. 5) 1942.

11. Herbst, W. P.: Biochemical Therapeusis in Carcinoma of the Prostate Gland: Preliminary Report, J. A. M. A **120:** 1116-1120 (Dec. 5) 1942.

12. Alyea, E. P., and Henderson, A. F.: Carcinoma of the Prostate: Immediate Response to Bilateral Orchiectomy; Clinical and X-Ray Evidence, J. A. M. A. **120:** 1099-1102 (Dec. 5) 1942.

13. Randall, Alexander: Eight Year Results of Castration for Cancer of the Prostate, J. Urol. **48:** 706-709 (Dec.) 1942.

14. Thompson, G. J.: Transurethral Resection of Malignant Lesions of the Prostate Gland, J. A. M. A. **120:** 1105-1109 (Dec. 5) 1942.

15. Hinman, Frank: Surgery in Cancer of the Prostate, J. A. M. A. **119:** 669 (June 20) 1942. Creevy, C. D.: The Diagnosis and Treatment of Early Carcinoma of the Prostate, ibid. **120:** 1102-1105 (Dec. 5) 1942.

THE DIAGNOSIS AND TREATMENT OF EARLY CARCINOMA OF THE PROSTATE

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Cancer of the prostate gland, because of its frequent occurrence and silent onset, occupies a prominent place among the serious maladies affecting men past 50 years of age. In the early stages it gives no warning of its presence. Later, when symptoms occur from extension of the disease beyond the prostate, complete surgical removal of the gland will not eradicate the disease.

By "early carcinoma of the prostate gland" I refer to those cases in which the cancer is entirely confined within the boundaries of the prostate. In such cases, when the remainder of the prostate is free from other pathologic abnormalities, there are no symptoms referable to the gland and the patient is unaware of the presence of prostatic disease. He first becomes aware of the growth only when it has spread to distant parts of the body. In most prostatic disorders the patient's attention is likely to be attracted to the disease by frequency of urination, diminished urinary stream or blood in the urine, but all of these symptoms are singularly absent in early, uncomplicated carcinoma of the prostate. The disclosure of a hard nodule in the prostate, on rectal palpation, is the only sign of uncomplicated early prostatic carcinoma.

ETIOLOGY

It has recently been shown by Huggins and his associates [1] that the stimulus causing the dissemination of prostatic carcinoma is an imbalance between the male and female sex hormones. "The activity of this neoplasm is increased by the injection of androgen and is decreased by significantly lowering the androgen level by excision of the testes or by inactivating the androgens by estrogen injection." The quantity of these two hormones produced within the body may be altered at about the age of 50 years. It is well within the realm of possibility that the varying quantities of androgens and estrogens in the body may produce prostatic cancer. Should this be proved, the indiscriminate and prolonged injection of androgens may prove very dangerous.

There is every evidence to suggest that the work by Huggins on these hormones has opened a new field in the search for the cause of cancer. Much evidence is accumulating to verify his findings on the relationship of androgens to prostatic cancer. Biochemistry may thus point the way in the search for the causes of other types of cancer.

THREE TYPES OF PROSTATIC DISEASE

It is necessary to have a clear conception of the normal prostate gland and to recognize the regions where various pathologic lesions may develop. According to Lowsley [2] the prostate is composed of five separate lobes, consisting of two lateral lobes and an anterior, a posterior and a median lobe. Usually the anterior, posterior and median lobes atrophy at or near birth and, as far as we know, have no function during life, although their remnants persist and are frequently demonstrable. There remain only the two lateral lobes, which enlarge at puberty and are vitally connected with the sexual function. These two lobes consist of long, branching, functioning glands in which prostatic fluid is formed. They also contain minute glands which extend just under the mucosa, whose exact function is not known. When we speak of the prostate during middle life we refer to these two lateral lobes.

It is generally believed that all prostatic disease develops in the same area and from the same portions of the gland. This is an erroneous assumption. There are three general areas within the prostate which may be involved in a pathologic process, and three main types of prostatic disease. It is usual for each type of pathologic change, at least during its inception, to limit itself to a particular area; but any combination of these distinct entities may coexist.

PROSTATIC INFECTION

The two lateral lobes, usually referred to as the functioning prostatic glands, are the seat of prostatic infections. Bacteria may invade the deep recesses of these tortuous glands in the lateral lobes and produce an acute or chronic prostatitis or a prostatic abscess or they may be the seat of endogenous prostatic calculi. According to recent investigations, the functioning portions of these lateral lobes are rarely the site of origin of either prostatic hyperplasia or cancer.

PROSTATIC HYPERPLASIA (SO-CALLED ADENOMA)

It is generally agreed that hyperplasia of the prostate develops just beneath the urethra. Deming and Wolf [3] in a recent study of 210 prostates showed that hyperplasia is first seen as a fibromuscular mass in the muscular wall of the prostatic urethra, which lies close to the urethra. These fibromuscular masses lie parallel to the muscular fibers of the urethra between the ducts of the functioning glands and stimulate epithelial hyperplasia from these ducts. These authors state that this hyperplasia is not an enlargement of existing prostatic glands but, although similar in structure, is composed of newly formed glandular elements from the ducts of the prostatic glands. This explains its locality surrounding the prostatic urethra, from which the growth extends to compress the functioning glands of the lateral lobes toward the capsule and hence assumes the position of the lateral lobes on each side of the urethra. This hyperplasia may also develop in the median, subcervical or subtrigonal lobe, where nests of glands are present.

CARCINOMA OF THE PROSTATE

Carcinoma develops as a distinct pathologic process in the prostate and is not related to either prostatic infection or hyperplasia. Carcinoma usually develops in the posterior lobe, an area rarely, if ever, affected by either infection or hyperplasia. According to Moore [4] and Rich [5] the frequent finding of compressed or atrophic prostatic glands with early carcinoma suggests that such a cancer may develop from, or in conjunction with, such senile atrophic remnants. Although carcinoma of the prostate is predominantly a lesion of the posterior lobe, it may arise in any portion of the gland. Moore states that carcinoma and hyperplasia of the prostate are two distinct lesions and occur inde-

From the Department of Urology (James Buchanan Brady Foundation) of the New York Hospital.

Read before the annual fall clinical conference of the Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 5, 1942.

1. Huggins, Charles; Scott, William W., and Hodges, Clarence V.: Studies on Prostatic Cancer, J. Urol. **46**: 997-1006 (Nov.) 1941.

2. Lowsley, O. S.: The Human Prostate Gland at Birth, J. A. M. A. **60**: 110-114 (Jan. 11) 1913.

3. Deming, Clyde L., and Wolf, J. S.: The Anatomical Origin of Benign Prostatic Enlargement, J. Urol. **42**: 566-580 (Oct.) 1939.

4. Moore, R. A.: The Morphology of Small Prostatic Carcinoma, J. Urol. **33**: 224 (March) 1935.

5. Rich, A. R.: Frequency of Occurrence of Occult Carcinoma of the Prostate, J. Urol. **33**: 215 (March) 1934.

pendently, although the two occasionally are found in the same portion of the gland. He further states that, viewed from the point of view of the general problem of invasion and metastases, carcinoma of the prostate exhibits early invasion of the perineural lymphatics within the organ, but metastases and invasion outside the organ is a late manifestation of the disease. This is important clinically, since early complete removal of the entire prostate will eradicate the disease. Complete pathologic examination of adequately removed prostates confirms the fact that diagnosis may be made in certain cases of early carcinoma and the growth completely removed before extension has occurred.

Only when one visualizes the site of origin and mode of progression of infection, hyperplasia and carcinoma of the prostate can one select the proper surgery for their relief. All of these three pathologic processes may develop in the same prostate but, as far as we know, each develops independently.

INCIDENCE OF OCCURRENCE

According to Moore [4] and to Rich [5] carcinoma of the prostate develops in approximately 15 per cent of men past 50 years of age. This incidence increases with advancing years. When one considers that one in every seven men past 50 years of age has carcinoma of the prostate, its importance in advancing years becomes apparent. It also becomes obvious that many of these cancers must progress very slowly; otherwise extensive carcinomatosis and death from prostatic malignancy would be an even more frequent finding among elderly men. Such extensions, however, are far too common, and prevention of their occurrence should be our goal. It may be that carcinoma of the prostate actually has become more common; but it is more likely that our awareness of its prevalence, plus improved diagnostic methods and careful search for its presence, accounts for its more frequent recognition.

SITE OF ORIGIN OF CARCINOMA

The most common site of origin of carcinoma of the prostate is the posterior lobe. This lobe is the portion of the gland posterior and posterolateral to the fan shaped ducts which enter the sides of the urethra. The function of this lobe, if any, is unknown, and it remains dormant from birth until senile changes occur. This lobe, together with the functioning prostatic glands, which also undergo atrophic changes at about 50 years of age, forms the false capsule of the prostate, often referred to as the posterior lamella. Most malignant growths occur in this area. On examination of the prostate by rectum, it is this posterior lamella with which the finger comes in contact. The ease with which it may be digitally palpated permits early recognition of any area suggestive of malignancy. Thus the importance of rectal palpation of the prostate during routine examinations becomes apparent.

SYMPTOMS

There are no symptoms of uncomplicated early carcinoma of the prostate. In the absence of other gross prostatic disease, no symptoms are present to call the patient's attention to this malady. Only when extension beyond surgical control has occurred do symptoms develop.

However, it is not uncommon for the prostate to be the site of two or even three distinct pathologic processes. Most other disturbances in the prostate present symptoms referable to this gland and, during examination, an area suggestive of malignancy may be encountered. Carcinoma may be present in conjunction with prostatic infection, and not infrequently some degree of hyperplasia coexists. The symptoms produced by the infection or hyperplasia cause the patient to seek relief, while the early carcinoma must be suspected from digital palpation alone.

DIAGNOSIS

Detection of the presence of early carcinoma of the prostate devolves on the physician who examines patients periodically for their general health. Without his help, few cases of early carcinoma of the prostate will ever be seen by the urologist. Certainly no general physical examination of a man 50 years of age or over is complete without rectal palpation of the prostate. If routine physical examinations of such patients were undertaken at least once a year, and the prostate palpated each time, many patients with areas suggestive of malignancy would be discovered and further investigation undertaken. For a physician to palpate a suspiciously hard nodule in a prostate and "wait" to see what happens is a violation of the trust placed in him. These are the patients who may be cured of this disease.

Since no symptoms are present in early prostatic malignancy, its presence is first suspected by rectal palpation of the prostate. Although a definite diagnosis cannot thus be made, it is from this group that cases suitable for total prostatectomy must be selected. The statement so often made that when the diagnosis of carcinoma has been made by rectal palpation it is too late for complete surgical removal has been disproved many times. When prostatic malignancy is suspected on rectal examination, perineal exposure of the prostate is warranted in order to confirm the diagnosis.

Carcinoma should be considered likely if an area—no matter how small—which feels definitely harder than the rest of the gland, is found in the prostate. Such an area is often situated to one side of the midline and may feel like a foreign body just inside the capsule of the prostate or between the rectum and the gland. The characteristic rounded feel of the prostate is abruptly broken by the hard area, which, as Smith [6] points out, gives the impression of a "square edge." These nodules may be multiple.

Carcinoma may be confused with fibrosis. The age of the patient may tend to relieve one's suspicion of malignancy. Fibrosis frequently is somewhat less hard than malignancy. One may also confuse early malignancy with prostatic calculi. The latter may be located so near the capsule that differentiation by palpation may be impossible. An x-ray examination will aid in making the diagnosis of calculi.

When a suggestive nodule is palpated in the prostate, I advise a perineal exposure to take a direct biopsy of the nodule. A frozen section is made and, if the diagnosis of carcinoma is confirmed, a complete prostatectomy, including removal of the seminal vesicles, is carried out at once. The perineal exposure of the prostate to secure an adequate specimen of the involved area seems to me to offer much more conclusive evidence of the disease than can be obtained by a punch biopsy. A needle passed through the perineum may fail to engage the involved area and a negative report still leaves the surgeon in doubt. A needle biopsy often obtains a few

6. Smith, George Gilbert: Total Perineal Prostatectomy of Carcinoma, J. Urol. **35**: 610 (June) 1936.

scattered cells which necessarily makes the diagnosis uncertain. A direct biopsy of the prostate permits one to ascertain the pattern of the diseased area and thus assures a correct diagnosis.

If an adequate biopsy is obtained through a perineal exposure and the frozen section fails to reveal a malignant growth, the perineum is closed and the patient may be discharged in three to four days. The urethra has not been opened and urination is not disturbed. Two such errors in diagnosis have been made by me within the past three years, but neither patient suffered any ill effects from this procedure. Both had local areas of fibrosis which could not be differentiated from a malignant condition by rectal palpation.

TREATMENT

"Complete prostatectomy" refers to the removal of the entire prostate with its capsule and the entire prostatic urethra. This procedure can be done only by the perineal approach, and such complete removal is necessary to eradicate the disease. The line of cleavage which permits hyperplasia of the prostate to be enucleated suprapubically leaves behind the entire posterior lamella, from which most malignant growths arise. Transurethral resection also removes the hyperplasia, but the so-called capsule, which is the posterior lamella of tissue, must of necessity be left behind. Thus, if carcinoma is not found in the tissue removed either by suprapubic prostatectomy or by transurethral resection, there still is no assurance that carcinoma of the prostate is not present. Several such patients have sought relief after each of these operations because of carcinoma of the prostate in the portion of the gland left behind.

Some changes in the technic of Young's[7] perineal surgery have improved our results in recent years. The perineal approach to the prostate has been simplified by Belt,[8] who follows the cleavage plane present between the longitudinal muscle fibers of the rectum and the external sphincter ani muscle, thus almost completely eliminating hemorrhage. It is our custom to remove the capsule of the prostate in almost every case in which perineal prostatectomy is indicated. By doing this we have removed all possibility of the subsequent development of prostatic cancer and may occasionally remove a very early or occult malignancy before a diagnosis is possible. It is not my practice to perform perineal prostatectomy except when specific indications for this approach exist. The distal urethra is completely severed from the apex of the prostate. The prostate is then excised from the vesical neck and the urethra sutured to the bladder neck over a Foley catheter placed through the urethra. The seminal vesicles are removed in carcinoma of the prostate, but in other instances they are cut, tied and left behind. No remnants of prostate are left behind to be the site of future pathologic changes. Bleeding is controlled by sutures in the bladder neck, and only a Penrose drain is left in the perineum for twelve to eighteen hours. Most perineal wounds drain no urine and many heal by first intervention. The catheter is removed about the twelfth postoperative day. I know of the development of no strictures at the vesical orifice following this procedure. Urinary control is rarely a problem with these patients, but it is not uncommon for a patient to pass a few drops of urine when coughing or on sudden exertion for a few days to weeks. Rectal fistula should be avoided by proper perineal dissection.

7. Young, H. H., and Davis, D. M.: Practice of Urology, Philadelphia, W. B. Saunders Company, 1926, vol. 1, chapter 7.

8. Belt, Elmer; Ebert, Carl E., and Surber, Alva C., Jr.: A New Anatomic Approach in Perineal Prostatectomy, J. Urol. **41**: 482 (April) 1939.

REPORT OF CASES

During the past two and one-half years I have had 8 private patients on whom a perineal exposure was undertaken for the diagnosis of early carcinoma of the prostate. One additional patient was subjected to a complete perineal prostatectomy because of definite prostatic infection with fibrosis which did not respond to any palliative treatment; in this patient an early unrecognized carcinoma was discovered by the pathologist. Of these 9 patients, 2 had localized areas of fibrosis and the prostate was exposed by perineum, a biopsy taken and the wound closed with no ill effects. The remaining 7 patients had early carcinoma of the prostate. None of them had evidence of extension outside the prostate or into either seminal vesicle. The following are brief summaries of their histories and pathologic reports:

CASE 1.—C. T., aged 59, admitted on March 19, 1940, complained of some dysuria and nocturia. Previous examination revealed a hard, nodular prostate on the left side and some enlargement on the right. Perineal exposure of the prostate was done on March 20. Frozen section showed adenocarcinoma. A total perineal prostatectomy was done. The temperature was 100.2 F. the following day and normal thereafter. The catheter was removed on the twelfth postoperative day. There was no perineal urine at any time. The wound healed and complete urinary control was immediate. The patient was out of bed and ready for discharge but remained in the hospital until the twenty-first postoperative day at his request. The pathologic examination was made by Dr. Foote. A frozen section revealed adenocarcinoma of the prostate. The prostate weighed 20 Gm. Scattered nodules consisted of granulomatous tissue and hyperplasia. There was no involvement of the perineural sheaths or seminal vesicles. At present the urine is normal; there are no symptoms; rectal palpation gives no evidence of recurrence.

CASE 2.—Dr. C. G., aged 68, admitted on Sept. 29, 1940, complained of occasional nocturia, but his local physician had discovered a hard nodule in his prostate. Perineal exposure of the prostate was done on October 2. Frozen section showed typical adenocarcinoma. Total prostatectomy was done. The temperature rose to 101 F. after operation, gradually returning to normal in five days. The catheter became plugged on the sixth postoperative day and was changed. It was removed on the fifteenth postoperative day, but some perineal urinary leakage required its reinsertion. It was finally removed on the twenty-third postoperative day, with the wound healed. The patient was ready for discharge but remained in the hospital until the thirty-first postoperative day. Urinary control was complete when he was discharged. Pathologic examination was made by Dr. Foote. A frozen section revealed typical adenocarcinoma of the prostate. Routine examination revealed adenomatoid hyperplasia. "Only here and there are there areas where there is a slight metaplasia and piling up of epithelium. . . . It is probable that the biopsy removed the entire malignant growth." The diagnosis was small and early carcinoma of the prostate. At present there are no symptoms; the urine is normal; there is no evidence of recurrence (figs. 1 and 2).

CASE 3.—W. B., aged 62, admitted on March 23, 1941, did not complain of any symptoms, but routine examination revealed a hard nodule in his prostate. His father had died of carcinoma of the prostate. Perineal exposure of the prostate was done on March 26. Frozen section showed carcinoma of the prostate. A total prostatectomy was done. The temperature rose to 102.2 F. the following day and returned to normal on the third day. The catheter was removed on the twelfth day, with a slight amount of urine draining through the perineum when voiding. There was no perineal urine after the twentieth day,

and control of urine was good. He was discharged on the twenty-third day. Pathologic examination was made by Dr. Foote. It revealed adenocarcinoma of the prostate, retention cyst of the prostate, fibrosis of the seminal vesicles and no extension beyond the prostate. At present there are no symptoms, urine is normal and there is no evidence of recurrence.

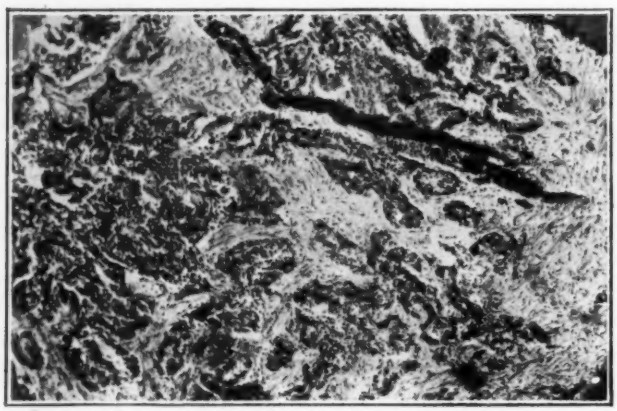

Fig. 1.—Frozen section from case 2 showing typical carcinoma of the prostate.

CASE 4.—H. W., aged 60, admitted on Oct. 26, 1941, did not complain of any symptoms, but routine examination had revealed a hard nodule in the prostate. Perineal exposure of the prostate was done on October 29. Frozen section showed adenocarcinoma of the prostate. Total prostatectomy was done. The temperature rose to 100 F. the following day and then remained normal. The catheter was removed on the tenth day. The wound healed and urinary control was complete. The patient was discharged on the twelfth postoperative day. The pathologic examination was made by Dr. Foote and Dr. Cannon. The prostate weighed 34.7 Gm. Adenocarcinoma was limited to the posterior lobe. There were no invasion of the capsule or of fat tissue around the prostate and no lymphatic invasion. The seminal vesicles were normal. At present there are no symptoms. Urine is normal. There is no evidence of recurrence (fig. 3).

CASE 5.—Dr. A. M., aged 69, admitted on Dec. 26, 1941, complained of frequency and pronounced discomfort in the prostatic region after urinating. He had had a transurethral

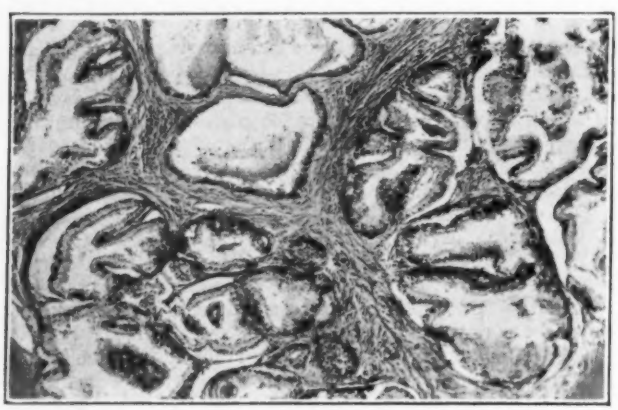

Fig. 2.—Section of excised prostate in case 2 showing only hyperplasia with no evidence of carcinoma.

resection three months previously, with no relief, and requested complete prostatectomy. A total perineal prostatectomy was done on December 29 for fibrosis and infection in the prostate, which had not responded to other treatment. The temperature rose to 99 F. on the day after operation and then remained normal. The catheter was removed on the tenth postoperative day, followed by some urinary drainage through the perineum. The catheter was reinserted and removed on the seventeenth postoperative day, with the wound healed and control complete. Pain persisted, requiring morphine. The patient remained in the hospital until the thirty-third postoperative day, at his request. Pathologic examination by Dr. Mider revealed fibrosis with infection. One small area contained an unsuspected malignant growth. At present, perineal discomfort persists; the urine is usually clear with normal control but owing to recurring pyelonephritis it occasionally contains gross infection; there is no evidence of local recurrence (fig. 4).

CASE 6.—C. S., aged 58, admitted on Aug. 6, 1942, did not complain of any symptoms, but routine examination revealed a hard nodule in the prostate. Perineal exposure of the prostate was done on August 10. Frozen section showed adenocarcinoma. A total prostatectomy was done. The temperature rose to 101 F. and returned to normal on the third postoperative day. The catheter was removed on the ninth postoperative day with the wound healed, and control was good except when he was coughing or on sudden exertion. He was ready for discharge on the eleventh postoperative day but remained in the hospital for other investigation until the sixteenth day. Pathologic examination by Dr. Mider revealed adenocarcinoma of the prostate. There was no infiltration of the capsule and no carcinoma around the nerves or blood vessels. The seminal vesicles were normal. At present there are no symptoms and the urine is clear (figs. 5 and 6).

CASE 7.—J. R., aged 59, admitted on Sept. 15, 1942, did not complain of any symptoms, but a hard nodule was palpated in

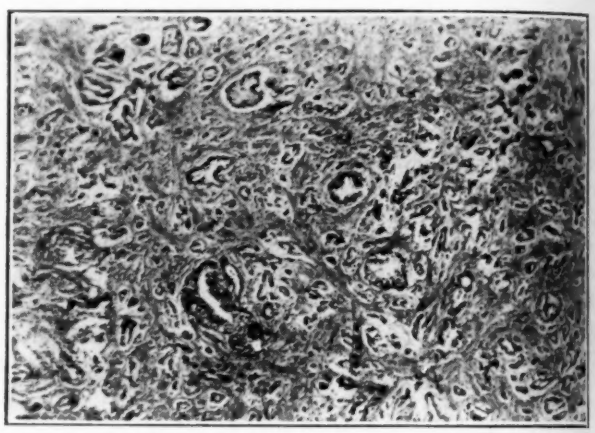

Fig. 3.—Carcinoma of the prostate from case 4 showing the typical small irregular acini closely grouped together. The epithelium of the longer acini is high and irregular. Capsule and seminal vesicle showed no invasion of malignant growth.

his prostate. Perineal exposure of the prostate was done on September 16. A frozen section revealed adenocarcinoma. A total prostatectomy was done. The temperature rose to 100 F. for one day and then became normal. The patient is still in the hospital, but no urine passes through the perineum. Pathologic examination revealed a wildly growing adenocarcinoma of the prostate with normal seminal vesicles; perineural invasion was present within the gland, but there was no extension outside the capsule.

COMMENT

I am presenting these 7 cases with the full realization that the time which has elapsed since operation is much too short to justify evaluation of the end results. However, evidence is presented to indicate that total prostatectomy may be done with little shock to the patient and with good functional results. From the pathologic reports of the specimens removed there is evidence that the carcinoma was completely removed in each case. In 1 instance (case 2) the report that "the biopsy probably removed the entire malignant growth" makes the likelihood of metastases beyond the prostate unlikely. In no instance were the perineural sheaths, lymphatic vessels or seminal vesicles involved.

It appears likely that carcinoma of the prostate may remain relatively dormant for many months without spreading beyond the confines of the prostate. Three of these patients (2, 4 and 6) had been told that they had a hard nodule in the prostate at least six months before surgical intervention. This confirms Moore's statement that "invasion of the vesicles and distant lymphatics is a late manifestation." However, it should not be inferred that one should "wait" to see what happens to a hard nodule in the prostate, since such delay may destroy the patient's chance of being cured.

The problem of exposure of the prostate may seem difficult. Careful dissection is necessary to avoid accidents, but we experience less difficulty in teaching our residents to do good perineal surgery than many other procedures. Even if the procedure appears difficult, this should only stimulate us to greater proficiency if this operation offers the patient a prolonged life expectancy.

More patients with early carcinoma of the prostate have been seen in recent years. Doctors have learned to recognize early prostatic cancer, yet the percentage of operable cases is still pitifully small. When one suspects malignant growth one should advise biopsy through a perineal exposure. If one's own urologist

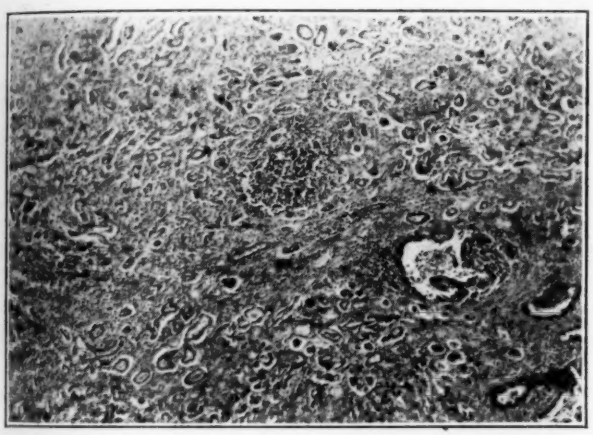

Fig. 4.—From case 5 showing the area of carcinoma. The acini are small and irregular, and the cells small and hyperchromatic. Areas of chronic prostatitis also are seen.

has failed to equip himself to do this procedure, one should find another who can. A negative punch biopsy is worse than nothing, since it gives one a sense of false security. There will never be a more grateful patient than the one who realizes that his physician has been aware of an early manifestation of cancer and has sought intelligent investigation and treatment to eradicate it before it was too late.

CONCLUSIONS

1. It is necessary to have a clear conception of the region in the prostate from which carcinoma usually develops in order to treat these patients properly.

(*a*) Infection and calculi develop in the functioning prostatic glands.

(*b*) Hyperplasia develops near the prostatic urethra (not from the functioning glands) and compresses the functioning glands toward the capsule.

(*c*) These compressed atrophic gland remnants, together with the dormant glands of the posterior lobe, form the posterior lamella, from which about 75 per cent of carcinoma develops. Any combination of these three distinct pathologic entities may be present in the same prostate.

2. Cancer of the prostate has been found in approximately 1 out of every 7 men past 50 years of age.

3. There are no symptoms of early cancer of the prostate, and no symptoms are present unless the prostate is the seat of another pathologic process.

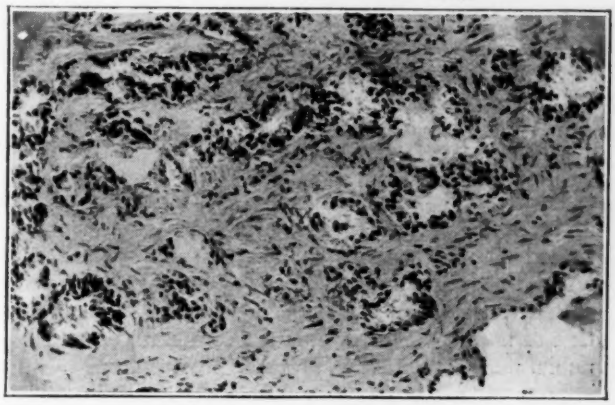

Fig. 5.—From case 6 showing high power magnification of area of carcinoma.

4. Early carcinoma of the prostate may be suspected by rectal palpation of a hard nodule near the presenting surface of the prostate. Diagnosis is preferably made by biopsy and frozen section taken through a perineal exposure of the prostate.

5. Total perineal prostatectomy is a rational procedure and offers the only hope of completely eradicating this disease. The shock from this procedure should be no greater and often is less than from other forms of surgery on the prostate. Following proper surgical technic the functional results should equal those of any other type of prostatic surgery.

6. Pathologic examination of the specimens removed in these 7 cases failed to reveal any extension of the cancer into the perineural sheaths, lymph vessels or seminal vesicles. Many such lesions must be slow to metastasize.

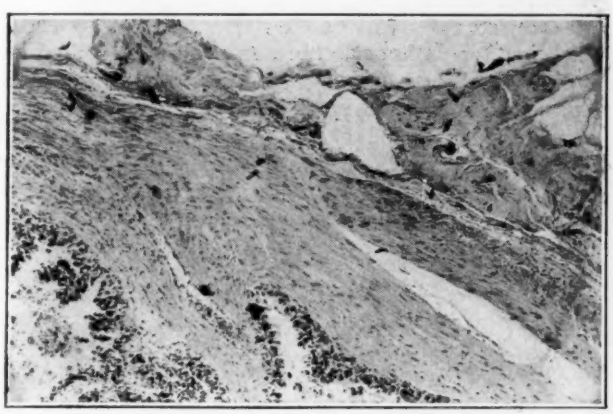

Fig. 6.—From case 6 showing the seminal vesicle with no evidence of invasion by carcinoma.

7. A careful digital palpation of the prostate should be a part of the physical examination of every man past 50 years of age. The finding of early lesions in the prostate suggestive of malignancy rests with the physician, and the urologist should prepare himself to investigate and treat these patients intelligently.

901 Lexington Avenue.

THE TREATMENT OF BENIGN PROSTATIC HYPERPLASIA

IN RELATION TO PROSTATIC CARCINOMA

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Amidst the lively controversy concerning the surgical treatment of benign prostatic hyperplasia it is imperative for the general practitioner as well as the urologist to keep the purpose of the operation clearly in mind. Stated simply, surgical treatment is undertaken in an effort to relieve the symptoms of urinary obstruction, so that micturition can again be normal. The restoration of normal micturition is the common goal of suprapubic, perineal and transurethral prostatectomy. In an attempt to reach this common goal, each operation is designed to remove the same hyperplastic prostatic tissue. A realization of the pathologic changes which occur in prostatic hyperplasia will aid in elucidating this fact.

Benign prostatic hyperplasia consists in the growth of a single adenoma or multiple adenomas. By the process of growth these adenomas compress the surrounding normal prostatic tissue, thus forming the so-called surgical capsule of the prostate gland. Complete removal of the adenomas and exposure of the entire surgical capsule of the gland is the goal of any operation for benign prostatic enlargement, regardless of whether the approach is by suprapubic, perineal or transurethral means. Thus each operation is designed to achieve the same end, and the only possible source of controversy is the method of approach to the enlarged prostate gland; we do not propose to discuss this problem. It is sufficient to state that each surgeon must decide which operation in his hands is attended with the lowest mortality and morbidity rates and the best functional results.

Knowledge of what each operation fails to accomplish is of equal importance. In none of the operations is the entire prostate gland removed. In all the operations prostatic tissue persists in the form of the surgical capsule of the gland. The potentiality for the development of recurrent benign hyperplasia and prostatic carcinoma remains present to an equal degree regardless of whether suprapubic, perineal or transurethral prostatectomy has been performed.

REPORT OF CASES

The late development of carcinoma of the prostate gland after suprapubic prostatectomy was recently brought to our attention by the following case:

CASE 1.—A man aged 56 first came to the clinic in 1916 complaining of symptoms of urinary obstruction of five years' duration. The obstruction finally had resulted in complete urinary retention. The patient appeared to be in good health, and results of physical examination were negative except for those of rectal palpation, which revealed benign prostatic enlargement graded 3 (on the basis of 1 to 4). Results of routine laboratory studies were within normal limits; a plain roentgenogram of the urinary tract disclosed no abnormality. The amount of the residual urine was 150 cc.

From the Section on Urology, Mayo Clinic.

Suprapubic prostatectomy was performed and the tissue removed weighed 70 Gm. (fig. 1). Microscopic examination of the tissue revealed adenofibromatous hyperplasia. Convalescence was entirely uneventful, and the patient was dismissed from the hospital on the ninth postoperative day.

In 1924, eight years after the prostatectomy, the patient returned to the clinic because of asymptomatic pyuria; he had no symptoms referable to the urinary tract. Results of physical examination again were essentially negative; rectal palpation disclosed the prostate gland to be smooth and firm. Urinalysis revealed pyuria of grade 2, and a plain roentgenogram of the urinary tract disclosed no abnormality. Cystoscopy showed areal cystitis and pronounced relaxation of the internal vesical sphincter muscle. The prostatic bed appeared clear, and no adenomas were visible. Vesical lavage was advised and the patient was dismissed.

In 1933, seventeen years after the prostatectomy of 1916, the patient returned to the clinic complaining of initial hematuria of two years' duration, associated with urgency of micturition and dysuria. To rectal palpation the prostate gland was enlarged to grade 2, and a hard nodule was palpable in the region of the right seminal vesicle. Cystoscopy disclosed definite enlargement of the right lobe of the prostate gland and lesser enlargement of the left lobe. In the right lobe were two nodules which were suggestive of either small adenomas or carcinoma. Considerable granulation tissue was noted in the floor of the urethra, and a specimen of tissue, removed for biopsy from the prostatic region through the cystoscope,

Fig. 1.—Adenomatous tissue removed by suprapubic enucleation in case 1.

was reported as being inflammatory tissue. Local applications to the prostatic urethra and vesical lavage were advised and the patient was dismissed.

The patient returned to the clinic for the last time in 1935, nineteen years after prostatectomy, complaining of hematuria and symptoms of moderate obstruction. Cystoscopy disclosed a typical carcinomatous nodule under the mucosa of the trigone. Carcinoma was found in both lateral and median lobes of the

prostate gland. Thirteen Gm. of tissue was removed by transurethral resection, and microscopic examination disclosed adenocarcinoma of grade 3 (fig. 2). The patient remained well for several years, but hematuria became severe and constant and the patient died of carcinoma of the prostate gland in 1938, twenty-two years after prostatectomy.

Fig. 2.—Section of tissue removed from the prostate gland of the same patient from whom the adenomatous tissue shown in figure 1 had been enucleated nineteen years previously. This section shows unquestionable adenocarcinoma (hematoxylin and eosin, × 100).

There are several features of interest in this case. A large amount of benign, hyperplastic prostatic tissue had been removed by suprapubic prostatectomy and the patient was known to be well, save for slight asymptomatic pyuria, eight years later. Urologic examination at that time, including cystoscopy, did not reveal any evidence of prostatic carcinoma. Seventeen years after prostatectomy the patient returned for treatment, and at this time carcinoma of the prostate gland undoubtedly was present; in all probability the carcinoma had been present for the preceding two years. Rectal palpation disclosed a hard nodule in the prostate gland, in contrast to the results of previous rectal palpations. In addition, cystoscopy revealed changes suggestive of carcinoma. Positive evidence of the presence of carcinoma was obtained at the time of the patient's last admission, nineteen years after prostatectomy.

The number of years which this patient lived, even though he was afflicted with a high grade carcinoma of the prostate gland, also is of interest. In spite of the fact that the patient received no specific measures for the cure of carcinoma of the prostate gland, such as radical prostatectomy, and received no treatment directed toward alleviation of the condition, such as orchiectomy or the administration of estrogen, he lived comfortably for seven years before he finally succumbed to carcinoma of the prostate gland. This case clearly illustrates the fact that in the evaluation of any type of therapy directed toward a given disease, it is imperative to consider the natural course of the disease.

The following case, illustrating the development of carcinoma of the prostate gland many years after perineal prostatectomy, also is of interest:

CASE 2.—A dentist aged 65 first came to the clinic in 1909 complaining of symptoms of urinary obstruction of six years' duration. For three years previous to his admission he had been unable to void and had had to resort to catheterization. Six weeks before admission he experienced chills and fever and noted pain and swelling of the perineum and scrotum. By rectal palpation the prostate gland was found to be firm and to extend beyond the reach of the examiner's finger. A diagnosis of "prostatic abscess" was made and perineal drainage was carried out. The patient responded satisfactorily. Three weeks later perineal prostatectomy was performed (fig. 3). Microscopic examination of the tissue removed disclosed benign adenofibromatous hyperplasia. Convalescence was uneventful, but the patient experienced urinary incontinence for six months. Urinary continence was regained, however, and two years after perineal prostatectomy the patient wrote to us stating that he had no urinary symptoms and was enjoying perfect health.

The patient returned for the last time in 1919, ten years after prostatectomy. He stated that he had been perfectly well until the previous year, when he noted the onset of urinary frequency, dysuria and incontinence. Seven months before this last admission a mass had appeared in the right groin. By rectal palpation the prostate gland was found to be enlarged to grade 3 and unquestionably malignant. A lymph node removed from the groin for biopsy was reported by the pathologists as being involved by metastatic adenocarcinoma. A permanent suprapubic cystostomy catheter was inserted, but the patient failed gradually and died of carcinoma of the prostate gland in 1921, twelve years after the perineal prostatectomy.

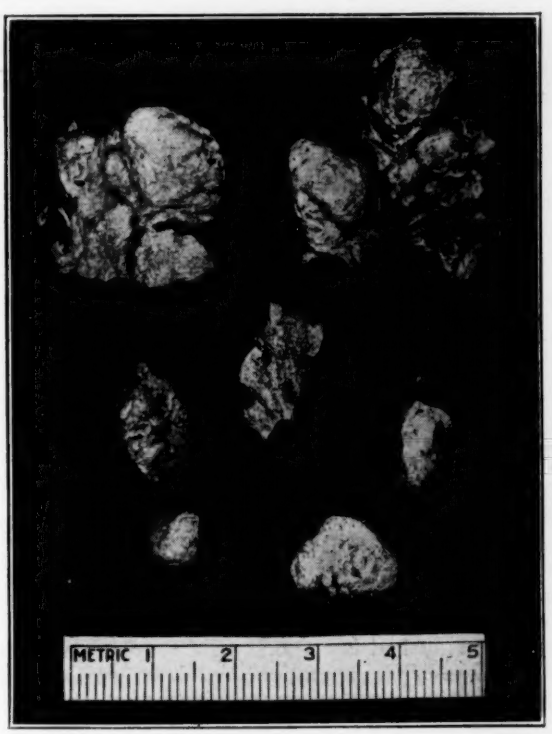

Fig. 3.—Tissue enucleated from the prostate gland by the perineal route in case 2.

The foregoing two reports illustrate the fact that prostatic carcinoma can appear many years after suprapubic or perineal prostatectomy. In an entirely analo-

gous manner, transurethral prostatic resection does not preclude the future development of carcinoma of the prostate gland. The following case clearly illustrates this point:

CASE 3.—A man aged 64 first came to the clinic in 1934 complaining of symptoms of gradually progressive urinary obstruction of four years' duration. This condition finally had resulted in complete retention of urine. Physical examination revealed the bladder to be distended to the level of the umbilicus. By rectal palpation the prostate gland was noted to be enlarged to grade 2, resilient and smooth. The blood urea was 60 mg. per hundred cubic centimeters of blood and a plain roentgenogram of the urinary tract disclosed nothing abnormal save hypertrophic changes of the lumbar portion of the spinal column. Transurethral prostatic resection was carried out in two stages and a total of 54 Gm. of tissue was removed. Microscopic examination of this tissue revealed adenofibromatous hyperplasia of the prostate gland. Convalescence was uneventful, and the patient was able to void easily at the time of dismissal.

The patient returned in 1940, six years after transurethral resection, and stated that he had been perfectly well until the preceding two months, at which time he had noted symptoms of progressive urinary obstruction and finally complete retention. By rectal palpation the prostate gland was found to be enlarged to grade 3, but its tissue apparently was benign. The value for blood urea was 86 mg. per hundred cubic centimeters of blood and a plain roentgenogram of the urinary tract disclosed hypertrophic changes of the lumbar portion of the spinal column. Transurethral prostatic resection was performed, and 45 Gm. of tissue was removed. Microscopic examination of this tissue revealed adenocarcinoma of grade 4.

It is apparent, therefore, that prostatectomy performed either by suprapubic, perineal or transurethral methods confers no immunity on the patient so treated against the subsequent development of prostatic carcinoma. Regardless of the type of operation performed, the potentiality for carcinoma remains present to an equal degree. A cursory examination of our records disclosed 5 other cases in which suprapubic prostatectomy had been performed at the Mayo Clinic and microscopic examination had revealed benign adenofibromatous hyperplasia. In each instance the patient returned at a later date, and a diagnosis of carcinoma of the prostate gland, verified by microscopic examination, was made. The interval between the time of prostatectomy and the time at which a diagnosis of carcinoma of the prostate gland was made varied from ten to eighteen years; the average was thirteen years. The carcinoma usually was of a high grade of malignancy, and the 3 patients who could be traced lived for an average period of eight months after the diagnosis of carcinoma had been made.

In addition, we have examined the records of 8 patients who had had suprapubic prostatectomy performed elsewhere many years previous to their admission to the clinic. To the best of our knowledge the prostatectomy had been performed for benign prostatic hyperplasia. The operation had been performed, on an average, sixteen years previous to the admission of the patients to the clinic. In each case tissue removed at the Mayo Clinic by transurethral prostatic resection disclosed carcinoma. With one exception the carcinoma was of a high grade of malignancy; that is, of grade 3 to 4. One patient died while he was in the hospital; the rest survived for an average period of thirteen months.

One of the advantages frequently ascribed to suprapubic and perineal prostatectomy is that they permit complete removal of a small carcinoma which has apparently remained localized within an adenoma. In such cases, usually, the presence of a carcinoma is not considered before operation, and only microscopic examination discloses its presence. It is claimed that enucleation of an adenoma of this type will effect a cure. Although such a happy outcome remains exceedingly rare, we report the following case as a commentary on such a claim:

CASE 4.—A man aged 57 came to the clinic in 1928 because of acute urinary retention of two days' duration which required decompression. Results of physical examination were negative excepting that rectal palpation disclosed benign enlargement of the prostate gland of grade 3. Cytoscopy revealed benign trilobar prostatic hyperplasia, and two stage suprapubic prostatectomy was performed, 30 Gm. of tissue being removed. The pathologist reported that a small zone of carcinoma of grade 2 was located within the adenoma. No specific measures were directed toward treatment of the carcinoma, and the patient made an uneventful convalescence. He has returned to the clinic on numerous occasions since operation, and examination has failed to disclose any evidence of carcinoma. At the time of this report, fourteen years after prostatectomy, the patient is enjoying perfect health.

Despite what might be inferred, the cure achieved in the foregoing case does not attest any special advantage of the suprapubic method of prostatectomy. Prostatectomy performed by either the transurethral or the perineal route would have removed the same tissue and effected a similar cure. Just such a happy outcome is illustrated in the following case:

CASE 5.—A man aged 66 came to the clinic in 1934 complaining of symptoms of progressive urinary obstruction of four years' duration. One episode of complete retention had occurred two weeks before his admission. Rectal palpation disclosed benign enlargement of the prostate gland of grade 2. Transurethral prostatic resection was performed, and 10.5 Gm. of tissue was removed. According to the pathologist the tissue removed represented adenofibromatous hyperplasia of the prostate gland; one small zone of adenocarcinoma of grade 2 was discovered. Convalescence was uneventful, and the patient was able to void easily.

The patient returned in 1937 and stated that he had experienced no urinary symptoms until the preceding day, when he noticed gross hematuria that had rapidly disappeared. By rectal palpation the tissue of the prostate gland was considered to be benign, and cystoscopy disclosed numerous varicosities in the posterior urethra and several inflammatory cysts.

The patient returned the next year because of symptoms of mild urinary obstruction for which his home physician had advised operation. The prostate gland was considered to be benign on the basis of rectal palpation; cystoscopy likewise failed to reveal any evidence of prostatic malignancy. Enlargement of the lateral lobes was present, and 32 Gm. of tissue was removed by transurethral resection. The tissue was examined carefully by the pathologist, but he was unable to find carcinoma.

The patient returned for the last time in 1941, seven years after the first resection. The purpose of his last admission was removal of his remaining teeth, as suggested by his home physician. He said he had not had any urinary symptoms, and the prostate gland was considered to be benign on the basis of rectal examination. To the date of the writing of this paper, eight years after resection, there has been no evidence of carcinoma of the prostate gland.

Although a small carcinoma may be localized within an adenoma, it is usually impossible, unfortunately, to cure the patient of carcinoma by enucleation or resection of the adenoma. Because of the early spread of carcinoma of the prostate gland through the perineural lymphatic vessels, regardless of the size or location of the primary lesion, the possibility of complete eradication of the neoplasm is not great. The following case illustrates this point clearly:

CASE 6.—A man aged 65 first came to the clinic in 1932 complaining of repeated attacks of complete urinary retention requiring catheterization. Rectal examination disclosed a smooth, benign enlargement of the prostate gland of moderate size. Cystoscopy revealed enlargement of both lateral lobes, without evidence of malignancy. Primary suprapubic prostatectomy was performed, and 36 Gm. of tissue was removed. The pathologist's report was "adenofibromatous hyperplasia with one microscopic area of beginning adenocarcinoma."

The patient returned two years later because of symptoms of urinary obstruction and pain in the sacrum. Physical examination revealed that the patient had lost weight and strength. The prostate gland, as palpated rectally, was enlarged, hard and fixed. A hard, fixed mass was palpable in the right inguinal region and was interpreted as being a metastatic malignant process. Transurethral prostatic resection was performed, and 8 Gm. of tissue was removed; microscopic examination revealed adenocarcinoma of the prostate gland of grade 3.

COMMENT AND CONCLUSIONS

In conversations with physicians who are not urologists we have been impressed by their misconceptions concerning the three commonly performed operations for benign prostatic hyperplasia. Perhaps the most widespread misconception is that the performance of suprapubic or simple perineal prostatectomy precludes the subsequent development of carcinoma of the prostate gland or recurrent prostatic hyperplasia. This belief is entirely fallacious, and we have presented instances in which carcinoma of the prostate gland has occurred many years after such operations. This misconception can be corrected by the simple statement that normal prostatic tissue, in the form of the surgical capsule, remains regardless of whether suprapubic, perineal or transurethral prostatectomy has been carried out. Thus, the possibility of the development of recurrent hyperplasia or prostatic carcinoma is present to an equal degree irrespective of which one of these operations has been performed. The only operation devised to remove all prostatic tissue is radical perineal prostatectomy in which the entire prostate gland, a portion of the urethra, a cuff of the bladder, both seminal vesicles and about 5 cm. of each vas deferens are removed. This operation, however, is employed exclusively in cases of prostatic carcinoma, and even by its most ardent advocates it is applied, with hope of cure, in only approximately 3 per cent of cases of prostatic cancer.

The surgical treatment of benign prostatic enlargement can be summarized by the statement that in each case it is necessary to remove a certain definite amount of hyperplastic tissue: this tissue can be removed through a suprapubic or perineal wound or through the urethra, and each surgeon must decide which method of approach is most suitable in his own hands.

One of the advantages frequently ascribed to suprapubic or simple perineal prostatectomy is the removal of an undetected carcinoma located within an adenoma. We have described such a case (case 4), but unfortunately the happy outcome in this case is extremely infrequent. Furthermore, although it is true that this apparent cure was achieved by suprapubic prostatectomy, it is undeniable that a similar cure would have been attained by the performance of either perineal or transurethral prostatectomy. More frequently than not, however, in spite of the fact that the carcinoma may be microscopic in size (case 6), the lesion has spread to the perineural lymphatic vessels, and in such a case cure by any of the three methods described herein is impossible.

THE USE OF CONCENTRATED RED CELLS AS A SUBSTITUTE FOR WHOLE BLOOD

IN THE TRANSFUSION THERAPY OF ANEMIA

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It is well known that plasma is preferable to whole blood in combating the hemoconcentration of surgical shock. However, the use of the cellular portion of the blood in the transfusion therapy of anemia has not been widely discussed in this country. The present production of large amounts of plasma for war purposes leaves as a by-product the cellular portion of the blood. That it is practical to give this concentrated cellular portion without dilution in the form of multiple transfusions has been demonstrated by MacQuaide and Mollison [1] and Williams and Davie [2] in England. This method appears to have several advantages over the use of whole blood in the transfusion therapy of anemia. A larger amount of red cells can be given in the same total quantity, thus reducing the time and effort necessary to achieve the desired result. Patients with reduced cardiac reserve as well as anemia may be given transfusions of concentrated cells with less chance of producing failure of the left ventricle. If the concentrated red cells now available are used when indicated in place of whole blood, more plasma will be available for the treatment of shock.

My purpose in this report is to call attention to the use of concentrated cell transfusions as a substitute for whole blood in the treatment of anemia and to present some of the striking results obtained.

PROCEDURE

The material used was obtained from the Cutter Laboratories in Berkeley, Calif., where plasma is derived from blood collected by the Red Cross Blood Donor Service in a large West Coast area. The citrated whole blood is centrifuged at 2,400 revolutions a minute for twenty minutes and 250 cc. of the supernatant plasma withdrawn by suction. The remaining 250 cc., consisting of red cells covered with a patchy layer of leukocytes and platelets, is transported to us in the original container the day after withdrawal from the donor. Each flask contains sufficient plasma to make the material liquid, and an even suspension of erythrocytes can be produced by gentle shaking.

Owing to the difficulty of transporting the material to Stanford Hospital at frequent intervals, only group O cells are used. The blood group is checked and the major cross match done before each transfusion. Samples for these and other determinations are withdrawn from the flask by sterile serologic pipets. The blood is stored at 4 to 6 C. and is given without warming shortly after removal from the refrigerator.

The hematocrit value of 30 specimens varied from 84 to 95 per cent. Fifty per cent of these showed evidence of varying amounts of free hemoglobin in the

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The San Francisco Unit of the American Women's Voluntary Services dependably and efficiently transported the blood from Berkeley to San Francisco.

1. MacQuaide, D. H. G., and Mollison, P. L.: Treatment of Anemia by Transfusion of Concentrated Suspensions of Red Cells, Brit. M. J. **2**: 555 (Oct. 26) 1940.

2. Williams, G. E. O., and Davie, T. B.: Preparation and Use of Concentrated Red Cell Suspensions in Treatment of Anemia, Brit. M. J. **2**: 641 (Nov. 8) 1941.

supernatant plasma. My associates and I confirmed the finding of others [3] that this does not necessarily indicate an increase in cell fragility as measured by susceptibility to hypotonic saline solution and probably represents spontaneous dehemoglobinization described by Kolmer.[3]

The transfusions are administered with an ordinary recipient set consisting of a 300 cc. cylinder connected to a Kaufman luer syringe by 4 feet of rubber tubing. The only filtering device is a double thickness of sterile gauze stretched over a funnel placed in the top of the cylinder. An 18 gage needle is used for all transfusions, and the rate of flow is controlled by gravity. If the reservoir is placed 3 feet above the antecubital space, 250 cc. of the concentrated cells can be administered in forty minutes. A small amount of saline solution is used to start the intravenous infusion, but an appreciable dilution is not necessary to obtain a steady uninterrupted flow. In most procedures the cells from 2 or 3 pints of blood are given and the contents of the second or third flask added when the reservoir is nearly empty.

The patients receiving the transfusions were in both the clinic and the private services of the hospital. In all,

TABLE 1.—*Clinical Diagnoses in Group of Cases*

Cause or Type of Anemia	Number of Cases
Acute blood loss	4
Chronic blood loss	3
Leukemia	4
Hodgkin's disease	1
Bright's disease with uremia	9
Aplastic anemia	1
Postoperative anemia associated with chronic infection and blood loss	3
Primary anemia	3
Unexplained anemia associated with pregnancy	1
Hemolytic anemia	1
Total	30

the cells from 92 pints of blood have been given to 30 patients in forty-four procedures. The clinical diagnoses of the group of patients are presented in table 1.

RESULTS

Hematocrit readings [4] were made before the procedure was carried out and on the following day. Two hundred and fifty cc. of concentrated cells produced an average rise of 2.9 per cent in the hematocrit value. The change in the hematocrit reading was proportional to the amount of blood given, so that 750 cc. of concentrated red cells produced a rise of 8.5 to 9 per cent and a dramatic change in the appearance of the patient. Four cases are presented to illustrate the efficiency and efficacy of the method:

CASE 1.—A white man aged 34 with a diagnosis of chronic nephritis, followed in the nephritis clinic for ten years, has been in a state of chronic uremia with associated anemia for five years. Mild cardiac failure developed with pulmonary edema in October 1942, but the patient made a good response to rest and digitalis. After returning to work he continued to have dyspnea on mild exertion and at times exhibited a gallop rhythm. It was thought that improvement in the oxygen carrying capacity of his blood might decrease cardiac work and relieve his symptoms. As usual, his anemia (hematocrit reading 26) had shown no response to liver and iron therapy. He was admitted to the ward on Jan. 13, 1943, where a 450 cc. transfusion of concentrated red cells was given without difficulty or ill effect. The next day he received a second transfusion of an equal amount, following which his temperature rose to 38.3 C. (101 F.) rectally without the sensation of discomfort. There was no rise in blood pressure (190 systolic, 110 diastolic) following transfusion, and vital capacity (3,200 cc.) was not diminished. The hematocrit reading was 40.5 when he was discharged the following morning. Four weeks later it was 35.5. In spite of the striking improvement in the anemia and general appearance, he did not experience great subjective change, although the dyspnea on exertion did diminish.

All 9 patients with uremia and anemia received 400 to 500 cc. of concentrated cells at one time. None of these patients were in congestive failure but 4 had symptoms and signs which indicated that failure was imminent. One patient, a man aged 38 in the final stages of uremia, developed transitory pulmonary edema and orthopnea following a transfusion of 500 cc. of concentrated cells. This was anticipated, since he had experienced bouts of paroxysmal dyspnea for several nights preceding entry. It is noteworthy that a patient in such a precarious condition could take enough blood to increase his hematocrit reading from 24 to 30 and hemoglobin from 44 to 63 per cent (Sahli) in a single procedure. Most of the 9 patients with anemia secondary to uremia experienced little improvement in general symptoms, but all were in fairly advanced stages with the blood creatinine level varying from 6 to 12 mg. per hundred cubic centimeters. The cosmetic effect in diminishing the pallor was the most striking effect observed.

CASE 2.—A woman aged 34 was brought to the hospital on Jan. 22, 1942 during the eighth month of pregnancy because of extreme pallor. She had noted easy fatigue and dyspnea for only one week, although a history of blood loss or jaundice could not be obtained. She was very obese and there was considerable air hunger. The scleras were clear and the skin and mucous membrane pale. The size of the abdomen was consistent with an eight months pregnancy, and the fetal heart could be heard. The hemoglobin level was 20 per cent (Sahli) on entry. Her blood was Rh positive. Following one transfusion of whole blood the hemoglobin was 25 per cent (Sahli) and the erythrocytes numbered 1,490,000 per cubic millimeter. The hematocrit reading was 11.5 and by the Wintrobe standards all the cells were small (mean corpuscular volume 76.7 cubic microns) but well filled with hemoglobin (mean corpuscular hemoglobin 28.7 micromicrograms) (mean corpuscular hemoglobin concentration 37.5 per cent). The reticulocyte count varied from 2.3 to 3.3 per cent. The icteric index was 3 and the resistance of the erythrocytes to hypotonic saline solution was normal. Leukocyte counts were within normal range, platelets numbered 105,000 per cubic millimeter. Stool examinations were negative for occult blood.

The transfusion of whole blood given shortly after entry relieved the air hunger somewhat. The second hospital day she was given 450 cc. of concentrated red cells, which raised the hematocrit reading to 20, and the hemoglobin to 40 per cent (Sahli). The patient continued to show a low reticulocyte percentage considering the degree of anemia, and five days later the hematocrit was still 20. She was given a second transfusion of 500 cc. of concentrated cells, following which the hematocrit reading was 26.5. Sternal puncture showed erythroblastic hyperplasia. Following this she continued to improve on iron therapy. Two weeks later the hemoglobin was 75 per cent (Sahli), and the erythrocyte count 3,700,000 per cubic millimeter. She was discharged improved to return for delivery. The cause of her anemia remains in doubt.

3. Kolmer, J. A., and Howard, M.: Studies on the Preservation of Human Blood, Am. J. M. Sc. **200**: 311 (Sept.) 1940. Crosbie, A., and Scarborough, H.: Studies on Stored Blood, Edinburgh M. J. **49**: 40 (Jan.) 1942.

4. Hematocrit determinations were done by the Wintrobe method.

This case illustrates several advantages of using concentrated cell transfusions. It was necessary to increase the oxygen carrying capacity of the patient's blood as quickly as possible, since premature labor could have begun at any time. There was considerable technical difficulty in finding superficial veins for intravenous infusion and it was a great advantage to reduce the number of procedures by half in order to achieve the same results as would have been obtained with whole blood transfusions.

CASE 3.—A man aged 35 had been discharged from the hospital four weeks previously with a diagnosis of monoblastic leukemia and secondary anemia. During his hospital stay he had received a total of seven transfusions of whole blood, which raised the hemoglobin level from 26 per cent (Sahli) to 82 per cent at the time of discharge. He was readmitted on Jan. 25, 1942 because of bleeding from the mouth following the incision of a peritonsillar abscess. He appeared acutely ill. The skin was pale and covered with petechiae. The tonsils were large, infected and covered with clots. The edge of the spleen was palpable. Examination of the blood showed a severe anemia and thrombopenia and many monoblasts in the circulating blood. He received one transfusion of 500 cc. of bank blood and one of 600 cc. of fresh citrated blood but continued to bleed from the mouth. Three days after admission the hematocrit reading was 18. He was given 750 cc. of concentrated cells, which he took without discomfort or reaction. The following day he received an equal amount without incident. The capillary bleeding time fell from fifteen minutes to three and a half minutes and there was a cessation of oozing from the tonsillar incision. There was a questionable rise in platelets from 2,000 to 10,000 on repeated counts, and the hematocrit level rose to 36. The tonsillar lesion responded well to local x-ray therapy. During the next two weeks in the hospital he received transfusions of 450 cc. and 650 cc. of concentrated cells. He was discharged at the end of the third week considerably improved, with a hemoglobin level of 90 per cent (Sahli) and an erythrocyte count of 4,400,000 per cubic millimeter. Crops of petechiae continued to appear, however.

By use of the concentrated cell transfusions this patient received enough blood in twenty-four hours to double the volume of circulating red cells and bring his hemoglobin from a low level (35 per cent) to one approaching normal (70 per cent). Two of the patients with leukemia showed bleeding tendencies, which seemed to be as well controlled by transfusions of concentrated cells as by whole blood. There were no reactions to multiple transfusions in this particular group.

CASE 4.—A white man aged 29, a welder, was admitted to the hospital on Feb. 10, 1943 following the sudden onset of weakness eighteen hours before and passage of several tarry stools. He gave a history of epigastric distress after meals for the past several months. There was pallor of the skin and mucous membranes, and the forehead was slightly moist but the extremities were not cold. The blood pressure was 120 systolic and 62 diastolic. The pulse rate was 138 a minute and he was moderately restless. There was an old fracture deformity of the left arm. Physical examination was not otherwise remarkable. The hematocrit reading was 18 and the hemoglobin was 40 per cent (Sahli). On entry he was given 500 cc. of concentrated red cells. The following day the hematocrit reading was 23 and the hemoglobin was 50 per cent. He then received a second transfusion of 500 cc. of concentrated cells. On the fifth hospital day the hematocrit reading was 31 and the hemoglobin was 62 per cent (Sahli). The plasma proteins were 5.7 Gm. per hundred cubic centimeters. He improved rapidly on a soft diet and his hemoglobin level climbed steadily. Stools became negative to the guaiac test for occult blood. A gastrointestinal series on the twelfth hospital day showed deformity of the duodenal cap, but an ulcer crater could not be demonstrated.

The treatment of anemia of acute blood loss with transfusions of concentrated cells presents a more complex problem than refractory anemias, since the loss of plasma proteins is not replaced. Investigation of the effect of acute blood loss in normal human subjects [5] shows a steady fall of plasma proteins during an initial period of three hours following hemorrhage due to replacement of the plasma lost by protein poor fluid. Thereafter an increase in plasma volume is not accompanied by a further drop in protein. It is concluded as a result that the plasma volume is determined by the amount of circulating protein and that the normal mechanism for adding plasma to the circulation acts slowly over two or three days. Many patients suffering from severe gastrointestinal hemorrhage from a bleeding ulcer or ruptured varix are likely to have low plasma proteins at the time of onset.[6] Protein replacement may be slower than in normal subjects because of poor reserves and restricted diet. In view of these findings it is evident that transfusions of concentrated cells should not be used as a substitute for whole blood in the treatment of acute blood loss without regard to the level of plasma proteins or plasma volume. Three of the 4 patients with anemia from blood loss in this series benefited a great deal from the transfusions; the fourth, an elderly man, died of other complications.

REACTIONS TO TRANSFUSION

A total of seven febrile reactions occurred following the forty-four procedures. Of these, four consisted of a rise in temperature of less than 2 degrees C. (3.6 degrees F.) and were accompanied by slight chilly sensations but no real discomfort. The others consisted of more prolonged febrile reactions beginning the day after a transfusion with the highest temperature recorded at 39.8 C. (103.6 F.) rectally. There were no subjective sensations except a feeling of warmth and headache, and the temperature was down to normal in twenty-four hours. One patient with a diagnosis of aleukemic leukemia had exhibited a similar reaction following a previous transfusion of whole blood. In only 1 instance did a severe chill occur, followed by a high fever. This patient has experienced many similar reactions during the previous three years following transfusions with all types of blood for therapy of an aplastic anemia. All febrile reactions followed transfusions of 500 to 700 cc. of concentrated cells. There is no evidence that free hemoglobin in the plasma was a factor in producing the febrile reactions. It appears from these figures that reactions to transfusion in this comparatively small group of cases did not represent a greater problem than with ordinary methods.

Fourteen of the 30 patients had blood of group O, the remainder of A or B. Since small amounts of group O plasma were given, hemolytic reactions from the introduction of incompatible isoagglutinins were not anticipated and none occurred. Seven hundred and

5. Ebert, R. V.; Stead, E. A., Jr., and Gibson, J. G., II: Response of Normal Subjects to Acute Blood Loss, Arch. Int. Med. **68**: 578 (Sept.) 1941.

6. Riggs, H. E.; Reinhold, J. G.; Boles, R. S., and Shore, P. S.: Qualitative Circulatory Deficiencies Observed in Peptic Ulcer, Am. J. Digest. Dis. **8**: 383 (Oct.) 1941. Post, Joseph, and Patek, A. J., Jr.: Serum Proteins in Cirrhosis of Liver, Arch. Int. Med. **69**: 67 (Jan.) 1942.

fifty cc. of concentrated cells, the largest amount given at one time, consists at most of 15 per cent plasma, or less than half the amount given with an ordinary transfusion of whole blood. The color of the plasma compared before and after transfusion in the hematocrit tube showed a slight but detectable increase in bilirubinemia in 5 instances. The icteric index was never greater than 8 units, however, and the increase was not accompanied by a febrile reaction. The patient with chronic hemolytic anemia showed a decided increase in bilirubinemia, as was anticipated.

Hemolytic reactions due to the development of an anti Rh agglutinin after repeated transfusions have been reported.[7] The severity of such an intra group reaction might be increased if a large amount of Rh positive cells were given to an Rh negative recipient who had been sensitized by previous transfusions. While not done in this series, special technics of detecting anti Rh and other atypical agglutinins are doubtless advisable before large amounts of concentrated cells are given to patients in whom isoimmunization may be a factor.

TABLE 2.—*Hemolysis of Erythrocytes of Citrated Blood Stored at 4 to 6 C. After the Removal of Most of the Plasma*

Days of Storage	Specimen	Initial Hemolysis	Definite Hemolysis	Hemolysis Complete
0	Control	0.46	0.44	0.26
1	No. 1	0.46	0.44	0.28
1	No. 2	0.44	0.42	0.28
3	No. 1	0.56	0.48	0.26
3	No. 2	0.60	0.48	0.30
5	No. 1	0.80	0.48	0.32
5	No. 2	0.80	0.60	0.34
7	No. 3	0.80	0.54	0.28
7	No. 4	0.80	0.70	0.32

EFFECTS OF STORAGE ON CONCENTRATED CELLS

All but two of the transfusions reported in this series were given within three days after the blood was withdrawn from the donor. Transfusions of 500 cc. of concentrated red cells on the fourth and fifth day resulted in the anticipated rise in hematocrit value, although there is evidence that the rise was more transitory. One transfusion of 500 cc. of concentrated cells, not included in this series, was given on the seventh day of storage. The resulting rise in hematocrit level persisted only forty-eight hours. The return of the hematocrit reading to the pretransfusion level was accompanied by an increase in the icteric index to 15 units. A second transfusion of cells stored for three days produced a rise in the hematocrit level that persisted without fall for seven days. Belk and Barnes [8] have observed that the survival time of erythrocytes in citrated whole blood diminished with increasing rapidity after three days' storage. It is conceivable that erythrocytes of citrated blood will undergo even more rapid deterioration if the bulk of the plasma has been removed.

Preliminary observations as to the effect of storage on the susceptibility of erythrocytes to hemolysis with hypotonic saline solution have been made. Results of observations made by the method of Daland and Worthley [9] are presented in table 2.

Decrease in resistance to hemolysis in hypotonic saline solution during the first week of storage of citrated whole blood has been observed by Kolmer and Howard [3] and Crosbie and Scarborough,[3] but the change was not as pronounced at the end of the first week as we observed it in cells stored without plasma. While our observations are not complete, they indicate that concentrated cell suspensions should be given within three days after withdrawal and separation from the plasma in order to obtain the most lasting results.

COMMENT

The use of the cellular portion of whole blood in the transfusion therapy of anemia is particularly important at the present time. A large amount of this material is being discarded because of lack of widespread recognition of its usefulness. It can be distributed easily and given at low cost to patients who might not otherwise receive transfusions. Concentrated red cells have a decided advantage over whole blood in the transfusion treatment of anemia, since fewer procedures are required to obtain the desired result and the hospital stay can be significantly shortened. There is no indication that the plasma content of whole blood is beneficial to these patients; it may be a decided disadvantage in the presence of reduced cardiac reserve. Our results so far indicate that concentrated cell transfusions are as efficacious as whole blood in controlling the bleeding tendencies of thrombocytopenia secondary to leukemia.

Of greater importance than these considerations is the use of concentrated cell transfusions in the place of whole blood as a means of saving plasma for war purposes. Whole blood given when only cells are needed represents the waste of so much plasma. No accurate figures are available for this institution, but it is estimated that at least one half of all transfusions given aim to correct anemia only. Physicians and hospitals using blood banks can save significant amounts of plasma by requesting only the cellular portion of the blood when that is all that is needed by the patient.

SUMMARY

Five per cent plasma with the cellular portion of blood for transfusions is sufficient to allow an even, uninterrupted flow with the ordinary recipient set and requires only a somewhat greater force of gravity. Single and multiple transfusions of type O cells have been given with good therapeutic results. The incidence of reactions does not appear to constitute a greater problem in the use of this type of blood. Blood from which most of the plasma has been removed is ideally suited for the transfusion therapy of patients with anemias refractory to other therapy and patients with anemia and reduced cardiac reserve. It is not so clearly indicated in the therapy of acute blood loss, since plasma proteins are not replaced.

Transfusions of concentrated cells might well be used when the cellular portion of the blood is all that is needed by the patient. If physicians and hospitals using blood banks will cooperate in requesting concentrated cells for transfusions, a large amount of plasma can be saved for war purposes.

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7. Wiener, A. S., and Peters, H. R.: Hemolytic Reactions Following Transfusion of Blood of the Homologous Group, with Three Cases in Which the Same Agglutinogen Was Responsible, Ann. Int. Med. **13**: 2306 (June) 1940. Landsteiner, Karl; Levine, P., and Jones, M. L.: On the Development of Isoagglutinins Following Transfusion, Proc. Soc. Exper. Biol. & Med. **25**: 672 (May) 1928.

8. Belk, W. P., and Barnes, B. C.: The Survival Time After Transfusion of Erythrocytes of Citrated Human Blood Stored at 4 to 6 Centigrade, Am. J. M. Sc. **201**: 838 (June) 1941.

9. Daland, Geneva A., and Worthley, Katherine: The Resistance of Red Blood Cells to Hemolysis in Hypotonic Solutions of Sodium Chloride, J. Lab. & Clin. Med. **20**: 1122 (Aug.) 1935.

RESULTS OF SURGICAL TREATMENT OF VARICOSE VEINS

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The exceedingly high incidence of vascular diseases among those living to the age of 40 has made the study of therapeutic methods to care for these vascular lesions of interest to all. A thorough survey recently completed of 537 employees of a large department store who had worked for fifteen years or more, and all of whom were over 40, showed the surprising x-ray evidence of arteriosclerosis of 46 per cent. In this group only 12 per cent had subnormal oscillometric readings; therefore the arteriosclerosis was subclinical and unless x-ray films had been taken the person would not have been aware of the condition. Men and women differed both in incidence and in degree of arterial changes. While there was x-ray calcification in 44 per cent of the men, only 18 per cent of the women showed roentgenographic changes. In the group with advanced changes (plaques and the like) there were 30 per cent of the men but no women. It may be that further study will show that, like the graying of hair and wrinkles, arterial changes are metabolic and not pathologic unless some accident causes occlusion.

In the same study it was found that 40 per cent of the men and 70 per cent of the women had varicose veins which were pathologic and were causing symptoms. The sex difference was most interesting. The higher rate among the women could not be based on the pregnancy factor alone, as when those who had had pregnancies were eliminated the incidence was still 60 per cent, or nearly twice as great as among the men. It would appear, then, that the male deteriorates on the arterial side and the female on the venous. Efforts to determine the cause for the sex difference in the incidence of varix have not been conclusive, but it does appear that a structural difference in the pelvis and perhaps the congestion of the menstrual cycle play a part, with pregnancy and its complications being the precipitating cause.[1] Despite the causes, it is apparent that 2 out of 3 women who continue actively at work eventually will develop varicose veins and be candidates for the complications of varicose veins, namely phlebitis or ulceration. In a total war men are subjected to strains that most of them are ill prepared to withstand. The long periods of standing, fights through jungles and against icy winds and adaptation to the peculiar positions necessary to man tanks, cramped cockpits or fox holes will all be registered as precipitating factors in the development of future vascular lesions.

Civilians will be more affected than usual. Older persons will take their places at tedious standing positions, operating unusual pedal apparatus and in general utilizing parts of the body not acclimated for the strain. One can expect a great increase in these lesions with this new precipitating factor, and, from the requests for information from the various camps, the armed services are already experiencing these problems. The treatment of a condition which affects such a large group is therefore a timely subject.

When the valves in the superficial veins have become incompetent, surgical treatment is the only type that can be helpful. In our clinic 4 out of 5 patients have these valve incompetences and therefore resection of the saphenous vein is required. In private practice, in which neglect is not so uncommon, two thirds of the cases still come to operation.

In the selection of the patient for operation certain tests are important. These are:

1. Determination of arterial supply. The history will be important, as claudication, temperature and color changes in the skin, a history of frequent infections or diabetes mellitus are significant. Palpation of the major arteries, determination of the oscillometric readings and at times x-ray examination will be helpful in determining which of the patients have an arterial disease. The simple question How far can you walk? will be effective if arch and other ambulatory difficulties are eliminated.

2. Determination of deep vein patency. A history of phlebitis or "milk leg" is important. A test can be done readily by taking careful circumferential measurements at set points in the thigh, calf and ankle, then applying Ace type bandages and tourniquets with the veins empty, permitting the patient to walk for ten minutes and then remeasuring. In the normal person there will be a decrease in the circumference. Increase in size or pain is an indication of deep vein closure. An improved modificatioin in the measurements in this test can be made by noting the displacement in a tank of water before and after walking.

3. The adequacy of the saphenous-femoral valve. This is readily demonstrated by elevating the patient's leg and emptying the veins, applying the tourniquet high in the groin and, with the patient standing, removing the tourniquet and noting whether the veins fill from above or below. A rapid filling from above indicate valve failure.

4. Testing for the incompetent communicating branches.[2] An Ace bandage is applied from the toes to the groin and a tourniquet placed on the thigh above this area. As the bandage is removed, a sudden protrusion of a collection of veins shows the point of incompetence. A second Ace bandage, which may be wrapped from above down, exposes only a small area at a time and is helpful. All those "blow outs" or valve incompetences then are scheduled for operative resection.

Our study reveals that 80 per cent of those registered at the clinic have incompetent valves and require operative treatment. It must be remembered that this clinic is located in downtown New York in a section where people of a low economic status live and where self neglect is not unusual.

OPERATIVE TECHNIC

Experience has illustrated the importance of certain technical points in the operation. Only local anesthesia should be used, and simple infiltration from a single needle puncture (thus reducing danger to infection) is entirely satisfactory. Approximately 80 to 100 cc. of 1 per cent procaine hydrochloride is the average amount. The location of the saphenous vein at the femoral junction can be determined by the "one by one rule," 1 inch lateral and 1 inch below the spine of the pubis. The spine of the pubis is palpable even in obese persons. A transverse incision is chosen because it is in the line of skin cleavage and therefore heals more readily. Blunt dissection will expose the vein which on the average is

From the Surgical Vascular Service, New York Post-Graduate Medical School and Hospital of Columbia University.

1. Lake, Michael; Pratt, G. H., and Wright, I. S.: Arteriosclerosis and Varicose Veins: Occupational Activities and Other Factors, J. A. M. A. **119:** 696 (June 27) 1942.

2. Pratt, G. H.: Test for Incompetent Communicating Branches in Surgical Treatment of Varicose Veins, J. A. M. A. **117:** 100 (July 12) 1941.

11 mm. in diameter. Elevation of the saphenous vein with a tape assists in the demonstration and resection of each of the branches entering the bulb. The inferior epigastric and circumflex iliac branches may be so high on the bulb that retraction above the inguinal ligament

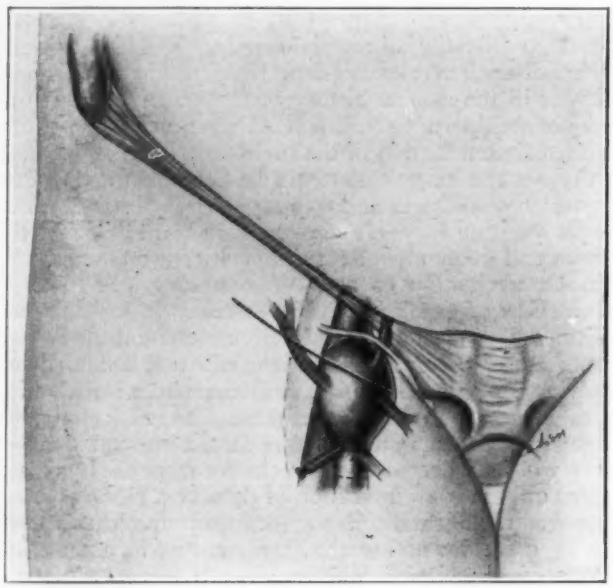

Fig. 1.—Anatomy of the area of the saphenous femoral valve; junction of saphenous vein and the femoral vein 1 inch lateral and 1 inch below the spine of the pubis; the superficial pudendal artery shown crossing the bulb is a good guide to the junction point. The branches of the saphenous vein illustrated are the superficial circumflex iliac, the superficial inferior epigastric, the superficial pudendal, the superficial medial and the lateral femoral cutaneous. Note that high retraction is necessary to expose all branches.

frequently is necessary to expose them. The anatomic junction of the saphenous vein with the femoral is difficult to demonstrate because of the dilated bulb present when the saphenous femoral valve is incompetent. The superficial pudendal artery (fig. 1) crossing the bulb is a good guide to this point. After resection of these and the other branches (external pudendal, medial and

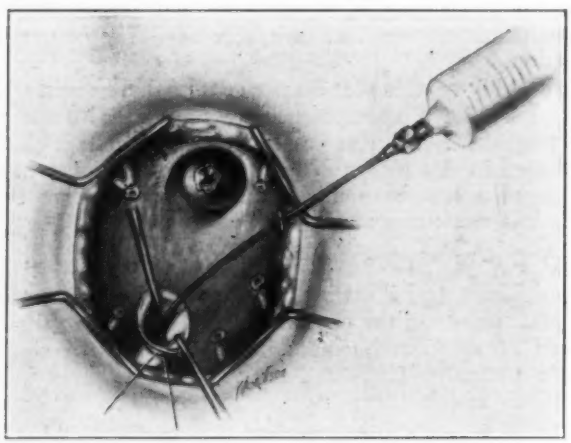

Fig. 2.—Dissection in the saphenous fossa; branches resected; femoral end ligated; distal end of saphenous opened; catheter inserted; solution introduced retrogradely as the catheter is withdrawn.

lateral femoral cutaneous veins), the saphenous vein should be divided 3 to 4 inches below the bulb, dissected up to the femoral junction and ligated flush with the femoral vein by a transfixion suture. The distal end is then opened and the saphenous vein sclerosed by the retrograde insertion of a solution through a ureteral type catheter.[3] This method permits even distribution of the solution throughout the course of the vein, and larger amounts can be introduced than are usually employed (fig. 2).

Animal experiments demonstrate that even at a distance of 2½ inches from the injection point intimal sclerosis is minimal. This testifies for the good results obtained by spacing the maximum sclerotic effect along the entire vein tree by the catheter method. If there are no contraindications (arterial disease, open ulcer), approximately 20 to 40 cc. of 3.5 per cent sodium ricinoleate may be introduced. The size of the vein is a good guide to the amount of solution to be utilized, as in the larger veins the increased blood content reduces the strength of the sclerosing solution. In small veins a relatively smaller amount of sclerosing

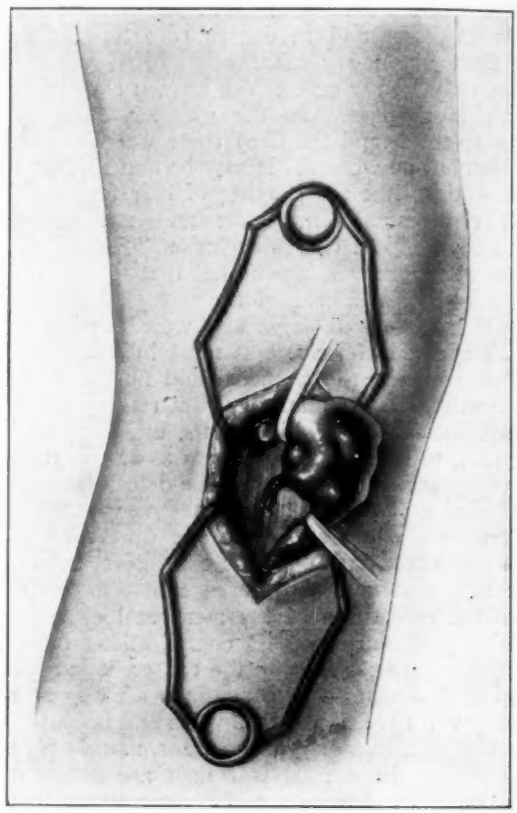

Fig. 3.—Resection of communicating branch ("blowout"). Note perforating branch which must be resected together with the saphenous.

solution is indicated. The distal end of the saphenous vein is then resected, transfixed and ligated. While the saphenous vein and its branches are being exposed in the groin, an assistant dissects the secondary points together with a section of the saphenous and the communicating branch (fig. 3). These are resected at the time the solution is introduced. The wounds are closed without drainage and are sealed, pressure pads are placed along the course of the saphenous vein and an Ace type bandage is applied from the toes to the groin. Our experience has demonstrated the value of steel wire suture material, and it is used exclusively.[4] The patient walks around the room at once and thereafter for fifteen to twenty minutes out of every hour. At the end of an

3. Pratt, G. H.: Segmented Sclerosis of Saphenous Vein, for Varicose Veins, Ulcers and Diminished Arterial Supply, J. A. M. A. **113**: 925 (Sept. 2) 1939.

4. Pratt, G. H.: Nine Years' Clinical Experience with Steel Wire as Suture Material, Surg., Gynec. & Obst. **74**: 845 (April) 1942.

hour the supporting bandages are removed and the legs are inspected for collections of excess sclerosing solution, as shown by discolorations. Extra pressure pads are applied at these points and the bandage is reapplied. The latter part of the technic is important in preventing sloughs and since its adoption has reduced sloughs to 0.5 per cent.

RESULTS

My associates and I have reexamined and obtained follow-up results on 357 patients who have been operated on during the last six years with the technic described. There were 224 women and 133 men. The average age was 45 for the men and 41 for the women. Of these patients 9.6 per cent had the operation on the two legs at the same time and the operations on the remainder of the group were equally divided between the right and the left leg. Of the women 26.1 per cent and of the men 20.7 per cent had open ulcers at the time of operation. Of the women who gave an etiologic history (46.8 per cent of the total) 59.2 per cent considered pregnancy as the cause. The other causes are given in table 1.

The indications for the operation were:

1. Incompetent saphenous femoral valves.
2. Incompetent communicating branch valves.
3. Varicose veins after phlebitis, when the phlebitis was inactive and the thrombosed vein had recanalized, leaving the collateral dilated veins as pathologic varices.

All of these patients were carefully examined and an estimate of the success of the procedure was made. The results necessarily are influenced by the personal factor of the examiner, but in these cases this influence was minimized by examination by several men at the same time. To have some criterion as to the results, the following standards were required:

A. Excellent, or 4 plus, results were those in which the patient was symptom free with no veins apparent and was given less than four subsequent injections. B. Good results, or 3 plus, were those in which the patient was symptom free, without recurrence, and was given less than eleven subsequent injections. C. Poor results, or 2 plus, were those in which there were some symptoms, some veins were apparent even after subsequent injections or obvious technical errors, such as failure to resect secondary blowouts, were apparent. D. The failures, 1 plus, were those in which the patient had symptoms—varicose veins were present or ulcers had reopened (table 2).

TABLE 1.—*Saphenous Vein Resection and Sclerosis*

	Men	Women
Average age	45 years	41 years
Ratio of men to women: 1 : 2		
Cause (from history):	Per Cent	
Hereditary	15	
Phlebitis		
Males	25	
Females	30	
Occupation	10	
Pregnancy	60	
Associated vascular disease	36	

Thirty-one per cent of the men and 28 per cent of the women had some concurrent disease, such as hypertension, diabetes, arteriosclerosis and cardiac lesion.

The average number of secondary ligations necessary was 2.3. The average percentage of the men who needed secondary injections was 23.4 and of the women 25.5.

The number of results reported as good or excellent is relatively high and is due partly to the fact that in some of the cases there has not been sufficient time for recurrences to develop. It is my hope that eventually 75 per cent of those operated on will fall in the good or excellent result class. Of the other 25 per cent, approximately one eighth will be failures due to technical error in resecting branches in the groin and one fourth to failure to resect the communicating branches accurately, and the rest to the development of a new incompetent communicating branch.

TABLE 2.—*Results of Vein Resection*

	Male	Female
4 plus: Symptom free; no recurrence; less than 3 injections	58.6%	56.6%
3 plus: Symptom free; less than 10 injections	30.9%	36.6%
4 plus and 3 plus	89.5%	93.2%
2 plus: Only fair; some local recurrences	6 %	4.9%
1 plus: Poor results; recurrence or ulcers reopened	4.5%	1.9%

It is important to emphasize that varicose veins as a result of phlebitis are a different type of vein; the treatment must be varied and the results cannot be as satisfactory as in the simple varicosities. While it is not in my province to discuss phlebitis at this time, it is well to emphasize that in my opinion varicosities after phlebitis should not be operated on until there is evidence of subsidence of the inflammation and complete recanalization of the phlebitic veins. Contraindications to the procedure are:

1. Active and continuing phlebitis. All other clinics have not made this a contraindication. I have seen two fatalities after ligation in the presence of phlebitis. I feel certain that ligation does not prevent pulmonary embolism, as I have observed pulmonary embolisms many times after ligation.
2. The closure of the deep veins. Under no condition should superficial or collateral veins be resected or sclerosed if the deep veins are not open.
3. The presence of an acute infection in the leg, such as cellulitis.

Arterial disease is no longer considered a contraindication to operation on varicose veins, as I have seen sufficient clinical improvement and reduction in claudication time to advocate the procedure therapeutically. When one considers that the arterial and venous systems in the capillaries are continuous, it is apparent that any increase in the back pressure, i. e. varicose veins, will be transmitted back to the arterial side of the capillary bed with greater peripheral resistance to the arterial flow. Reduction of this peripheral resistance by elimination of the stagnant veins thus will aid the arterial flow. The same discussion applies to patients with heart disease and congestive failure. Certain patients with heart disease definitely improve after removal of this large pool of blood in the venous system—at times as dramatically as after phlebotomy.

SUMMARY

1. With an increase in life expectancy, many patients with vascular diseases will require therapy. This is true of both arterial and venous lesions, but to a greater extent of the latter.

2. Total war with the severe demands on both military and civilian populations will be an active precipitating cause for an increase in venous problems.

3. If the major valves connecting the superficial and deep vein systems are incompetent, surgical therapy is necessary (60 to 80 per cent).

4. The technic effective in treating these patients is simple and safe if certain criteria rule in the selection of patients.

5. The results after a six year follow-up of patients so treated are good in a high percentage.

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RADIATION THERAPY OF ACUTE SUBDELTOID BURSITIS

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Since Codman's [1] original description of subdeltoid bursitis in 1906, many articles on this subject have appeared in the literature. All aspects of the condition and numerous methods of treatment have been repeatedly presented.

A number of investigators have shown that irradiation is the treatment of choice in certain types of cases. However, these reports have appeared chiefly in the radiologic literature, with comparatively few [2] in general publications. Therefore we wish to verify and draw attention to the merits of roentgen treatment of the painful shoulder.

A great many articles are available [3] presenting detailed reviews of the etiology, pathology, symptomatology and the like, so that only brief mention of these need be made here. The condition has been designated by a variety of names: subdeltoid bursitis, calcarea peritendinitis, periarthritis of the shoulder, calcifications of the supraspinatus tendon or simply painful shoulder. By common usage it is most often called subdeltoid bursitis.

There is no definite cause, although overuse and unaccustomed use of the arm are frequently factors. This was well shown by Bosworth,[4] who found a definitely higher incidence among typists than among clerks employed by the same company.

Sandström [5] and others have shown that the calcium usually present lies in the tendinous and peritendinous tissues and demonstrated that this calcium is deposited in preexisting degenerative tissue. Microscopically the bursa itself is not involved except for the posterior wall, which lies in contact with the supraspinatus tendon. Grossly the bursa is usually found to be bluish and tensely distended with a thick whitish material which is described as looking like tooth paste.

A division into acute and chronic groups is essential in attempting to evaluate any type of treatment. A subacute division is also often mentioned; however, the subacute and chronic cases tend to merge and are here considered as a single group.

Acute subdeltoid bursitis presents a very typical clinical picture. There is a rather sudden onset of severe pain in the shoulder, usually with no history of significant trauma. Exquisite point tenderness may be elicited over the area of the subdeltoid bursa, with pain radiating down the arm, limitation of motion, and muscle spasm. The patient is apprehensive about any attempts to move the arm, and there is no doubt that he has severe pain.

Roentgenograms should be made to rule out bone and joint disease. In typical cases the diagnosis of bursitis frequently will be verified by the demonstration of a deposit of calcium just lateral to the greater tubercle of the humerus. So that this deposit is not obscured by overlying bone, it may be necessary to make roentgenograms with the humerus in both internal and external rotation; fluoroscopy is often of value in determining the optimum position for demonstrating the calcium.

Chronic cases present similar but much less pronounced symptoms. The duration is several weeks, months or longer. The onset is usually insidious, although an occasional acute case may become chronic because of inadequate treatment. There is usually decided limitation of motion or an actual "freezing" of the shoulder.

Numerous methods of treatment have been enthusiastically advocated, each usually reflecting the principal interest of the proponent. The most frequently cited methods appear to be irrigation,[6] incision,[7] excision,[8] physical therapy [9] and manipulation. Any of these methods may produce relief of symptoms and a cure. Rest alone will be beneficial, often resulting in complete absorption of the calcareous deposits.[10] Therefore statistics based on cure or improvement do not offer an adequate basis for evaluating the efficacy of the various types of therapy. The treatment of choice should be that one offering the shortest period of disability.

With these criteria in mind we have reviewed a series of cases treated with radiation. The first report of such a series was presented by Lattman [11] in 1936, and in his series 15 of 20 patients treated were relieved of pain within forty-eight hours. This was closely followed by the work of de Lorimier,[12] who achieved similar results. Since then Pendergrass and Hodes,[13] Chapman,[2] Klein and Klemes,[10] Baird,[14] Sandström [5] and others have verified these claims.

The physical factors employed are 200 kilovolts (constant potential), 18 milliamperes, 0.5 mm. of copper plus 1.0 mm. of aluminum filter (1.18 mm. of copper half value layer), 50 cm. target skin distance and a 10 by 15 cm. port directed toward the anterolateral aspect of

From the Department of Radiology, St. Luke's Hospital, St. Louis.

1. Codman, E. A.: On Stiff and Painful Shoulders: The Anatomy of the Subdeltoid or Subacromial Bursa and Its Clinical Importance: Subdeltoid Bursitis, Boston M. & S. J. **154:** 613 (May 31) 1906.

2. Chapman, J. F.: Subacromial Bursitis and Supraspinatus Tendinitis: Roentgen Treatment, California & West. Med. **56:** 248 (April) 1942. Pendergrass, E. P., and Hodes, P. J.: Roentgen Irradiation in Treatment of Inflammations, Pennsylvania M. J. **45:** 447 (Feb.) 1942.

3. Carnett, J. B.: So-Called Calcifying Subacromial Bursitis, Radiology **17:** 505 (Sept.) 1931. Rogers, M. H.: Treatment of Subdeltoid Bursitis, Am. J. Surg. **43:** 292 (Feb.) 1939. Dick, G. F.; Hunt, L. W., and Ferry, J. L.: Calcification of the Supraspinatus Tendon, J. A. M. A. **116:** 1202 (March 22) 1941. Rubert, S. R.: Subacromial Bursitis: Clinical, Roentgenological and Statistical Study, Arch. Surg. **38:** 619 (Oct.) 1937. Bosworth.[4]

4. Bosworth, B. M.: Calcium Deposits in the Shoulder and Subacromial Bursitis, J. A. M. A. **116:** 2477 (May 31) 1941.

5. Sandström, Carl: Peritendinitis Calcarea, Am. J. Roentgenol. **40:** 1 (July) 1938.

6. Patterson, R. L., Jr., and Darrach, William: Tratment of Acute Bursitis (Subdeltoid) by Needle Irrigation, J. Bone & Joint Surg. **19:** 993 (Oct.) 1937. Patterson, R. L., Jr., and Patterson, R. H.: Further Observations on Treatment of Bursitis of Shoulder, Am. J. Surg. **49:** 403 (Sept.) 1940.

7. Ferguson, L. K.: Painful Shoulder Arising from Lesions of Subacromial Bursa and Supraspinatus Tendon, Ann. Surg. **105:** 243 (Feb.) 1937. Kaplan, Louis, and Ferguson, L. K.: Bursitis, Am. J. Surg. **37:** 455 (Sept.) 1937.

8. Bartels, W. P.: Surgical Treatment of Acute Subacromial Bursitis, J. Bone & Joint Surg. **22:** 120 (Jan.) 1940.

9. Troedsson, B. S.: Diathermy in Calcium Deposits Around Subacromial Bursa and Supraspinatus Tendon, Arch. Phys. Therapy **19:** 166 (March) 1938.

10. Klein, Isadore, and Klemes, I. S.: Treatment of Peritendinitis Calcarea in the Shoulder Joint, Radiology **37:** 325 (Sept.) 1941.

11. Lattman, Isidore: Treatment of Subacromial Bursitis by Roentgen Irradiation, Am. J. Roentgenol. **36:** 55 (July) 1936.

12. de Lorimier, Alfred: Roentgen Therapy in Acute Para-Arthritis, Am. J. Roentgenol. **38:** 178 (July) 1937.

13. Pendergrass, E. P., and Hodes, P. J.: Roentgen Irradiation in the Treatment of Inflammations, Am. J. Roentgenol. **45:** 74 (Jan.) 1941.

14. Baird, L. W.: Roentgen Irradiation of Calcareous Deposits About the Shoulder, Radiology **37:** 316 (Sept.) 1941.

the involved shoulder. A single treatment with a dose of 300 roentgens is usually sufficient although this may be repeated in from seven to ten days if there has been definite but incomplete relief.

The typical response in an acute case is a frequent but not inevitable aggravation of symptoms for eight to twenty-four hours. It is well, therefore, to provide adequate analgesics and place the arm in a sling during this period. This short period of aggravation is followed by rapid relief of pain and limitation of motion, so that in most instances the patient is able to resume his normal activities in from twenty-four to forty-eight hours after treatment. Residual tenderness usually disappears in a few days, and the calcium deposits will be absent in many instances if roentgenograms are repeated in a few weeks. The results are often quite startling both to the patient and to the referring physician.

Such were the results obtained in 11 out of 14 cases. Each of the 11 patients was able to resume normal activity within forty-eight hours. It is this rapid resumption of normal function that demonstrates the striking effect of roentgen treatment, and it is our belief that with no other form of therapy can so many patients be returned to normal activity so quickly.

If there has been no improvement at the end of forty-eight hours, operative treatment should be considered, and excision of the bursa was done in 2 such cases in this series. The third, a compensation case, was referred to a psychiatrist by the orthopedist and was lost for follow-up.

It should be noted that essentially similar results have been achieved in many more cases. However, these could not be included in this report because definite details of time of disability could not be ascertained in some and the original disabilty was not of sufficient significance in others.

A typical case is that of a typist who has had each shoulder involved at separate times. The first, in 1932, was on the left side, and at that time she was treated with diathermy and heat applications. She was completely disabled for a full month, three weeks of which time she was a hospital patient. Two years ago an acute subdeltoid bursitis suddenly developed on the right side and she was promptly given irradiation. The usual twenty-four hour aggravation was followed by rapid relief, and she resumed her work during the second twenty-four hours. In both instances calcium deposits were demonstrable, and there was a permanent cure with absorption of calcium. The variation in length of disability, however, was remarkable.

The impressive feature of roentgen treatment, then, and one of utmost importance to the patient, is the short period of disability as compared with any other method of treatment. In every successful case it was possible to resume normal activity within forty-eight hours. Time saved for doctors and hospital personnel is also of some importance.

For these reasons we believe that the treatment of choice for acute subdeltoid bursitis is irradiation. If within forty-eight hours there is no improvement, such treatment may be considered a failure and more radical procedures contemplated. Thus the patient is given the advantage of what is often the simplest and quickest relief obtainable, while if he is one of the small minority who will not be benefited he has lost comparatively little.

Unfortunately a similar response cannot be claimed for chronic bursitis. Approximately 30 per cent of the patients are improved in varying degrees, but only an occasional patient is cured by this method. If definite symptomatic relief is not apparent within ten days after treatment, we feel that the treatment must be considered a failure. If partial but incomplete relief is reported, then further treatments are justified.

It should be noted, however, that these shoulders respond poorly to any type of therapy, and it seems reasonable to submit such a patient to a trial of radiation therapy before instituting more radical measures. Several such cases in our series have shown improvement to such an extent that the operation or manipulation planned was not necessary.

CONCLUSIONS

1. The length of the patient's disability should be the chief criterion for evaluating therapy of acute subdeltoid bursitis.

2. Roentgen therapy of acute bursitis results in a high percentage of cases in which the economic disability of the patient is reduced to less than forty-eight hours. Therefore roentgen therapy is the treatment of choice in this condition.

3. A trial of roentgen therapy is justified for the chronic type of subdeltoid bursitis.

ENDOMETRIAL TUBERCULOSIS AS A CAUSE OF STERILITY

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Genital tuberculosis in the female is a disease mainly of the procreative period. Kelly [1] was unable to find more than 21 cases of genital tuberculosis in patients under 15 years. Hegar,[2] however, found it more frequently during childhood, although he admits that it appears mainly between the ages of 16 and 25. These authors also emphasize the fact that genital tuberculosis during childhood often remains unrecognized because of its atypical symptoms.

The frequency of genital tuberculosis decreases from the tubes toward the pelvic outlet. The tubes are affected most frequently (85 to 90 per cent). The reports concerning the general incidence of female genital tuberculosis and the incidence of tuberculosis of the different organs (namely the ovaries, myometrium, endometrium, and cervix) vary considerably.

In evaluating the results of the various statistical examinations one has to distinguish between women whose genitals are the only obviously affected system and a second group who show additional specific changes somewhere else.

In the latter group the diagnosis of genital tuberculosis is more likely to be made because one is more prone to think of a specific process of the genital organs in this group.

It must be remembered that the diagnosis of genital tuberculosis is difficult except when a tumor is present. Such instances, as is well known, are rather rare. The majority of women with genital tuberculosis show very few clinical symptoms and the condition is usually not

Professor Klopstock and Dr. Bregman made the bacteriologic examinations.
From the Department of Obstetrics and Gynecology and the Department of Pathology, Beilinson Hospital.

1. Cited by Norris, C. C.: Gynecological and Obstetrical Tuberculosis, New York, D. Appleton & Co., 1921, p. 356.
2. München. med. Wchnschr., 1899, p. 217.

discovered at all or is discovered only by chance during operation or postmortem examination.

Several methods have been proposed for facilitating the detection of genital tuberculosis. Daniel and Soimaru [3] inject a solution of dyes into the Douglas pouch and test its excretion into the urine. In the case of

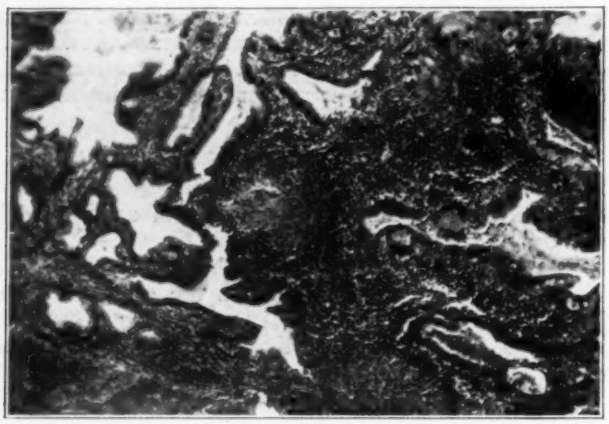

Fig. 1.—Giant cell tubercles in the stroma of the uterine mucosa and on the margin of glands.

adnexal tuberculosis this excretion is said to be diminished.

Wilson [3] maintains that in adnexal tuberculosis the Aschheim-Zondek test is positive. By others salpingography (Portes and his co-workers [3]) and pneumoperitoneum (Winz-Dyroff [3]) have been recommended. We have had no personal experience with these methods.

Heynemann [3] is correct in saying that the diagnosis of genital tuberculosis of women has not profited by the recent progress in the field of tuberculosis and is, as formerly, almost always left to chance.

A hypoplastic uterus is an important clinical sign suggesting genital tuberculosis. Heynemann states that it is a predisposing factor for the localization of tuberculosis in the uterus. Sellheim [4] suggests that the atrophy is secondary to tuberculosis; at any rate it is important

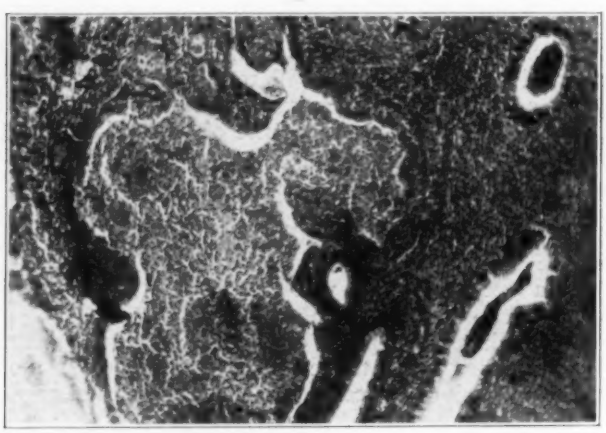

Fig. 2.—Penetration of tuberculous granulations into glands.

that in the presence of a hypoplastic uterus the possibility of genital tuberculosis should be suspected.

Since sterility frequently coincides with a hypoplastic uterus, one should suppose that genital tuberculosis might be found more often in these cases. Obvious as this idea seems to be, it is striking how little attention is paid to it in the literature.

What is stressed is the well known fact that a latent tuberculosis of the salpinx is quite frequently discovered only during an operation for sterility. It is further known that the inflammatory adnexal tumors which occur after salpingography probably are, in the majority of cases, specific hydrosalpinx or pyosalpinx originating from a latent tuberculous adnexitis. It is therefore not only useless but even dangerous to attempt to diagnose latent tuberculosis of the salpinx by salpingography. We ourselves know of 5 cases of inflammatory adnexal tumors which flared up after salpingography and later on turned out to be of tuberculous origin.

We report here results which confirm to an unexpected extent the coincidence between sterility and genital tuberculosis.

During the last two years we have done endometrial biopsies by means of strip curettage in cases of sterility in order to investigate the development of the cycle in the uterus mucosa and to prove or disprove the existence of normal ovulation. As a result we have found a considerable number of cases of tuberculosis which had not given rise to any other sign or symptom.

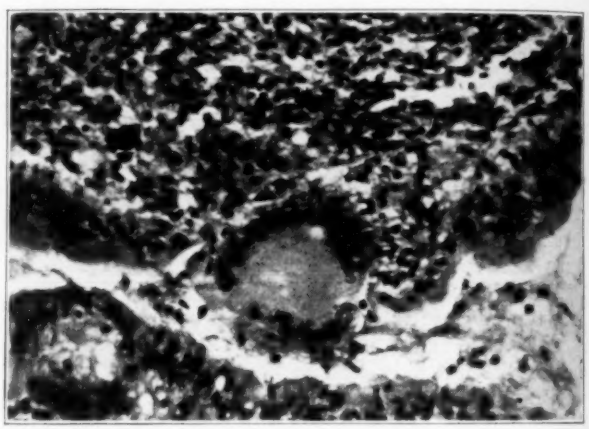

Fig. 3.—Greater magnification of figure 1, showing giant cell tubercles on the margin of a gland.

METHOD

On the whole, 208 endometrial biopsies have been carried out by us in cases of sterility. As a rule the curettage was done one to two days prior to the expected menstruation. The material obtained was fixed in 10 per cent solution of formaldehyde embedded in paraffin and stained with hematoxylin and eosin. On a number of patients showing microscopic tuberculous changes a second curettage was carried out and the material obtained was inoculated into guinea pigs as well as transferred on a suitable medium for culture.

Furthermore, it was possible to examine clinically and roentgenologically almost all of the women showing endometrial tuberculosis for other evidence of tuberculosis. In many cases the urine of the women was sent for culture. In a number of cases it was possible to examine bacteriologically the urine and sperm of the husbands.

RESULTS

There were 20 cases in which tuberculous endometritis was found microscopically.

The main tuberculous changes were epitheloid cell tubercles with giant cells in varying numbers and some-

3. Cited by Caffier, P.: Zentralbl. f. Gynäk. **59**: 2833 (Nov. 30) 1935.
4. Halban, Joseph, and Seitz, Ludwig: Biologie und Pathologie des Weibes, Berlin-Vienna, Urban & Schwarzenberg, 1926, vol. 5, p. 341, part 1.

times conglomerate tubercles. We did not find caseous changes. Frequently tuberculous granulations had penetrated into the lumens of the glands. Secondary nonspecific inflammatory changes were a rule in quite a number of cases (figs. 1, 2 and 3).

It is noteworthy that the uppermost layers of the mucous membrane were sometimes studded with numerous tubercles (fig. 4).

It is remarkable that in spite of the tuberculous changes present the different stages of secretion and proliferation were fully developed in a high percentage of the cases (fig. 5).

In some cases premenstrual hyperplasia was developed. In a few instances tubercles were found in an inactive atrophic endometrium (fig. 6).

On 4 women we performed a second curettage and examined the material by means of animal experiment and culture. All four cultures and three experiments on animals proved positive for tuberculosis. The fourth animal died prematurely.

In 18 of the 20 positive cases an examination of the lungs could be made, including x-ray examination. There was no evidence of active tuberculosis of the lungs in any of the cases.

Fig. 4.—Numerous tubercles in the upper layers of the uterine mucosa.

The sedimentation rate of erythrocytes was normal in 10 women examined. In only 3 cases was pleurisy mentioned in the history.

The age of the women was from 19 to 42.

Gynecologic examination did not reveal in any of the cases even the most trifling evidence of genital tuberculosis. Only 1 woman was primarily amenorrheic, a second one had not menstruated for six months and a third one menstruated every three or four months. Four were hypomenorrheic and 2 suffered from menorrhagia. In the remaining 12 cases no irregularities of the cycle or of menstruation could be ascertained. Sterility was the only complaint which caused these women to seek medical advice.

COMMENT

Tuberculous endometritis is only seldom thought of. As a rule it is found only by chance either at the occasion of a curettage made for other reasons or after microscopic examination of a uterus removed at operation or autopsy.

Dominguez [5] found among his clinical material of 5,516 cases only 5 cases of tuberculous endometritis.

5. Dominguez, C. M.: Ann. brasil de gynec. **8**: 93 (Aug.) 1939.

Diethelm and Ramsey [6] ascertained among the 3,647 microscopic examinations on the female genital tract 30 cases of genital tuberculosis. In only 1 case was the tuberculosis restricted to the endometrium.

Even among women with active tuberculosis of the lungs tuberculous endometritis does not seem to be of

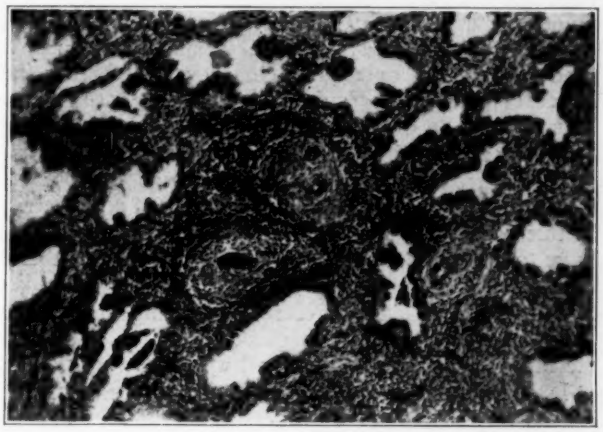

Fig. 5.—Giant cell tubercles in the stroma of a fully developed premenstrual hyperplasia.

frequent occurrence. Lackner and his co-workers [7] found among a group of 125 women with active tuberculosis of the lungs treated in the tuberculosis section of the Cook County Hospital only 2 cases of endometritis by means of curettage.

The high number of cases of tuberculous endometritis found by us in sterile, otherwise healthy, women points to a more than accidental connection between latent tuberculosis of the female genital tract and sterility.

On the basis of our results we have every reason to believe that many women with no obvious cause for their sterility suffer from latent genital tuberculosis. We have found tuberculous endometritis in about 10 per cent of our cases. But it is quite possible that in more than 10 per cent a latent genital tuberculosis was present and could have been proved if we had at our

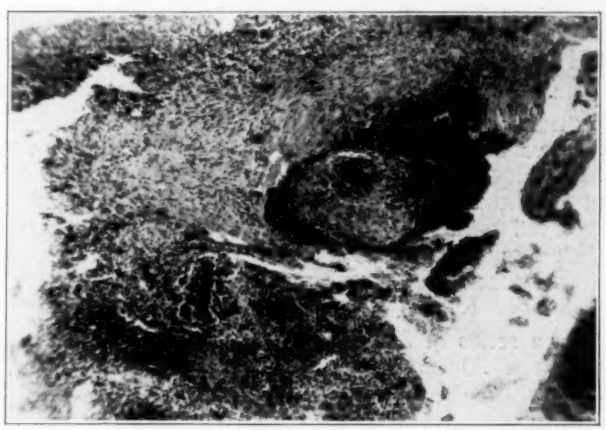

Fig. 6.—Tubercle in an atrophic uterine musoca.

disposal other diagnostic methods than strip curettage. Certainly through a complete evacuation of the mucosa more cases of tuberculosis would be made evident than by the use of the strip curettage only. As proof of this,

6. Diethelm, M. W., and Ramsey, T. L.: Am. J. Obst. & Gynec. **30**: 420-424 (Sept.) 1935.

7. Lackner, J. E.; Schiller, Walter, and Tulsky, A. S.: Am. J. Obst. & Gynec. **40**: 429 (Sept.) 1940.

we mention a case which showed normal mucosa in the first curettage but undoubted tuberculosis in the second curettage.

Furthermore, attention must be drawn to the opinion prevalent among pathologists and clinicians that the tubes are much more frequently affected than is the endometrium and that all women suffering from tuberculous endometritis suffer from endosalpingitis, whereas the latter need not always be associated with an endometritis. If this opinion is correct a still higher incidence of genital tuberculosis must be assumed in our series.

Lackner found in a series of 113 autopsies on women suffering from tuberculosis of the lungs 5.8 per cent tuberculous adnexitis and only 1.7 per cent endometritis. If this percentage is applied to our patients, we should have to assume a percentage of 30 per cent of tuberculous adnexitis.

We are justified, therefore, in stating that genital tuberculosis plays a much greater part as a cause of sterility than has been supposed up to now.

It still remains undecided whether the endometritis or the salpingitis accompanying it is the cause of the sterility. At any rate, it is not always a question of the patency of the tubes. Tuberculous endometritis is quite compatible with patent tubes, for insufflation tests in 5 of the 20 cases which were now positive had formerly been positive.

The path of infection of the uterine mucosa is uncertain. Hematogenic or lymphatic origin and intracanalicular extension from the tubes have to be considered. In favor of the latter is the fact that tuberculous salpingitis is more frequent than endometritis. Against the hematogenic origin stands the fact that tuberculosis of the ovaries is comparatively rare. If the hematogenic origin of infection were the usual one, the ovary, the tubes and the endometrium would probably be equally affected. It is improbable that there exists a primary tuberculous endometritis. As far as is known, endometritis is nearly always a secondary lesion.

The possibility of exogenic infection through a tuberculous partner by sperm containing tubercle bacilli seems to be negligible. The few specimens of sperm examined by us for tuberculosis by means of culture gave negative results. Other authors came to the same conclusion.

The problem of therapy seems difficult at present. A radical operation, as proposed by several authors, appears as a rule unjustified. The fibrotic form of tuberculous endometritis is to be interpreted as a sign of self healing. Radical surgery, therefore, should be reserved only for caseous processes. The experience with x-ray and radium irradiation is too small to allow a final conclusion.

SUMMARY

In a series of 208 sterile women examined by strip curettage 20 cases of tuberculous endometritis were found.

In those cases in which curettage could be repeated, the diagnosis was confirmed by inoculations into animals or by culture.

In none of these cases had tuberculosis previously been suspected.

Subsequent clinical and roentgenologic examinations failed to disclose any sign of active tuberculosis elsewhere.

ADDENDUM.—Since the paper was written 9 more cases of tuberculous endometritis have been found by us.

Clinical Notes, Suggestions and New Instruments

MYOCARDIAL ABSCESS

NATHAN FLAXMAN, M.D., CHICAGO

Abscess of the myocardium in itself is not important, but it can serve to emphasize the significance of the underlying infection. The literature on the subject is scant. Most of the reports in the older literature consist of a gross description of the heart without any information on the clinical course, bacteriology or underlying cause. Attention has not been given to the clinical conditions which make up the causes of myocardial abscesses.

Such an abscess is considered relatively rare, in most instances as a metastatic manifestation of overwhelming sepsis and of more theoretical than of clinical significance.[1] Saphir[2] stated that reports of abscesses in the myocardium are unusual, yet there seems to be no question that they occur quite often. As a matter of fact, he added, in every instance of pyemia abscesses may be expected in the myocardium.

Since the introduction and widespread use of the sulfonamide compounds many successful results have been obtained in diseases for which the mortality was exceedingly high. Because the sulfonamide compounds have changed our entire outlook toward many kinds of infection, it seems well to emphasize what diseases may cause myocardial abscesses. The myocardium, considering the character of its work, is the basic structure of a very durable organ, probably the toughest in the body. Various terms are used to designate how the infecting organism is conveyed to the heart muscle, such as sepsis, septicemia, bacteremia, pyemia, staphylococcemia and metastatic abscesses. The localization of abscesses in the lungs and kidneys is quite common in such conditions with a wide hematogenous spread. Abscess formation in the myocardium is less common and perhaps indicates a more virulent organism or a wider spread or both.

TABLE 1.—*Causes in Twenty-Nine Cases of Myocardial Abscess*

Bacterial endocarditis	8
Acute osteomyelitis	7
Cellulitis	4
Acute tonsillitis	2
Pneumonia	2
Carcinoma of uterus	1
Otitis media	1
Endopthalmitis	1
Lye esophagitis	1
Seminal vesiculitis	1
Puerperal sepsis	1

In the autopsy material at the Cook County Hospital, 29 (0.2 per cent) cases of myocardial abscesses were noted in 14,160 autopsies during the period from 1929 to 1942. At the Boston City Hospital 31 cases were noted,[1] while at the Michael Reese Hospital there were 32 (0.56 per cent) among 5,626 autopsies.[3] This report is based on a study of the 29 cases that came to autopsy at the Cook County Hospital.

BACTERIOSCOPY

Only one report [1] has bacterioscopic data available in 26 of its 31 cases: Staphylococcus aureus was responsible in 20, the pneumococcus in 2, Streptococcus viridans in 2, Streptococcus pyogenes in 1, and the meningococcus in 1. In my series the bacteria responsible were isolated in 28 of the 29 cases; Staph. aureus or albus in 23, Streptococcus hemolyticus in 2, the pneumococcus in 2, and Strep. viridans in 1. The organism mainly responsible is Staph. aureus. It is a deadly organism once it enters the blood stream. This bacterium, of generally

From the Cook County Hospital (service of Dr. Harry J. Isaacs) and the Department of Medicine, Loyola University School of Medicine.

1. Weiss, Soma, and Wilkins, R. W.: Myocardial Abscess with Perforation of the Heart, Am. J. M. Sc. **194**: 199 (Aug.) 1937.
2. Saphir, Otto: Myocarditis: A General Review, with an Analysis of 240 Cases, Arch. Path. **32**: 1000 (Dec.) 1941.
3. Saphir, Otto: Myocarditis, Arch. Path. **33**: 88 (Jan.) 1942.

low virulence and wide distribution, is usually a secondary invader, as it leads a saprophytic existence on the skin and mucous membranes of the body. Regardless of its apparent innocuity, it is exceedingly dangerous. The most insignificant point of infection may allow the staphylococcus to invade the blood stream, resulting in a very serious or fatal outcome owing to the formation of abscesses in one or many organs of the body.

addition to foci of necrosis, which are apparently the result of lodgment of small bacterial emboli in minute vessels or capillaries.

During this period 252 cases of bacterial endocarditis (34 acute and 218 subacute) were observed among the total number of cases in which necropsy was performed. These 8 cases referred to represent only 3 per cent of all the cases of bacterial endocarditis that came to autopsy. From the stand-

TABLE 2.—*Data on Eight Cases of Myocardial Abscess Due to Bacterial Endocarditis*

Case	Sex	Age	Race	Duration	Previous Heart Disease	Clinical Diagnosis	Autopsy	Heart Weight, Gm.	Bacteria
1	♂	43	White	1 week	None	Malignant endocarditis	Mitral and aortic	475	Negative
2	♂	9	Negro	1 month	Rheumatic	Subacute	Mitral	200	Staph. aureus
3	♂	17	White	2 weeks	Rheumatic	Subacute	All 4 valves	750	Staph. albus
4	♀	27	White	4 days	Rheumatic	Malignant	Mitral	350	Staph. albus
5	♂	65	White	1 day	None	Cerebral hemorrhage	Aortic and mitral	500	Staph. albus
6	♀	50	White	2 days	None	Meningitis	Mitral	300	Str. viridans
7	♀	28	Negro	1 day	None	Meningitis	Aortic	305	Staph. albus
8	♂	15 days	White	10 days	None	Septicemia	Mitral	22	Staph. aureus

TABLE 3.—*Data on Seven Cases of Myocardial Abscess Due to Acute Osteomyelitis*

Case	Sex	Age, Yrs.	Race	Duration of Symptoms	History	Clinical Diagnosis	Autopsy	Heart Weight, Gm.	Bacteria	Comment
1	♀	2½	White	3 days	Pain in ankle	Rheumatic arthritis	Left fibula	35	Staph. albus	X-ray negative
2	♂	18	White	9 days	Hurt knee	Rheumatic fever	Left femur	250	Staph. albus	X-ray negative
3	♂	9	White	3 weeks	Limping	Osteomyelitis of hip	Left hip	150	Staph. albus	X-ray showed hip dislocated upward
4	♂	2 mo.	White	2 days	Swollen face	Cellulitis	Left mandible	30	Staph. albus	X-ray negative
5	♂	12	White	4 days	Pain in thigh	Poliomyelitis	Right femur	200	Staph. albus	X-ray negative
6	♀	8	White	6 days	Pain in thigh	Osteomyelitis	Right femur	145	Staph. albus	X-ray negative
7	♂	36	White	14 days	Septicemia	Osteomyelitis	Right femur	260	Staph. albus	Osteomyelitis for past 14 years, all extremities

TABLE 4.—*Data on Fourteen Cases of Myocardial Abscess Due to Miscellaneous Infections*

Case	Sex	Age, Yrs.	Race	Duration	History	Clinical Diagnosis	Autopsy	Heart Weight, Gm.	Bacteria	Comment
1	♀	51	White	1 month	Inflamed leg	Cellulitis	Same	245	Staph. albus	Suppurative pericarditis
2	♀	1 mo.	White	1 day	Inflamed arm	Cellulitis	Same	25	Staph. albus	Suppurative pericarditis
3	♀	19	.....	5 days	Pimple on eyelid	Cellulitis	Same	330	Staph. albus	Cavernous sinus thrombosis
4	♂	23	Negro	1 week	Inflamed neck	Cellulitis	Same	270	Staph. albus	Cervical vein thrombosis
5	♂	43	White	3 weeks	Pneumonia	Lung abscess	Encapsulated empyema	310	Pneumococcus	Purulent pericarditis
6	♂	47	White	1 week	Pneumonia	Pneumonia	Same	400	Staph. albus	None
7	♂	6	White	2 days	Fever and convulsion	Septicemia	Acute tonsillitis	133	Str. hemolyticus	None
8	♂	9	White	2 days	Convulsion	Poliomyelitis	Acute tonsillitis and retrotonsillar abscess	124	Staph. albus	None
9	♀	23	White	3 months	Vaginal bleeding	Cancer of cervix	Same	290	Staph. albus	X-ray and radium therapy
10	♂	7 mos.	White	1 month	Otitis media	Same	Suppurative meningitis	45	Pneumococcus	None
11	♀	46	Negro	2 days	Iritis	Endophthalmitis	Brain abscesses	300	Str. viridans	None
12	♂	56	White	1 week	Abdominal pain	Peritonitis	Seminal vesiculitis	500	Staph. albus	None
13	♀	20	White	1 week	Puerperal fever	Same	Same	300	Staph. albus	None
14	♀	14	Negro	2 weeks	Lye poisoning	Mediastinitis	Periesophageal abscess	205	Staph. albus	None

CAUSATIVE FACTORS

The causes of abscesses in the myocardium have not been mentioned previously. For this reason, and mainly because two thirds of these diseases are now amenable to chemotherapy, it seems well to emphasize them. Among the 29 cases, 8 (27.5 per cent) were due to bacterial endocarditis and 7 (24.1 per cent) to acute osteomyelitis (table 1).

Bacterial Endocarditis.—Myocardial changes have been frequently noted and stressed in cases of acute and subacute bacterial endocarditis. Clawson [4] reported a greater frequency of abscesses in this than in any other form of endocarditis. Saphir [5] noted that typical abscesses were often present in point of frequency and present ability to cope with bacterial endocarditis, myocardial abscess due to this cause is of little importance.

Acute Osteomyelitis.—The surprising finding is that acute osteomyelitis may be more severe on the myocardium than bacterial endocarditis. A total of 80 patients with acute osteomyelitis came to autopsy, of which number 7 (8.7 per cent) had abscesses in the myocardium. Both diseases seem to affect the young especially, males more frequently than females. The average duration of symptoms in those with bacterial endocarditis was 8.5 days, while in those with acute osteomyelitis it was 7.5 days. The difficulty in diagnosis was equally great in the two groups, and the staphylococcus was the common offender. However, it is the great difference in response to present treatment that needs to be stressed. Whereas

4. Clawson, B. J.: Myocarditis, Am. Heart J. **4**: 1 (Oct.) 1928.
5. Saphir, Otto: Myocardial Lesions in Subacute Bacterial Endocarditis, Am. J. Path. **11**: 143 (Jan.) 1935.

bacterial endocarditis is seldom cured by the sulfonamide compounds, acute osteomyelitis is and can be cured by one of these drugs or by surgery, or by a combination of the two.

Miscellaneous Infections.—These include cases of myocardial abscess resulting from cellulitis, acute tonsillitis and pneumonia (table 4). In 13 of the 15 cases, chemotherapy or surgery or both as employed today might possibly have altered the outcome. This is becoming more apparent every day in cases of staphylococcemia. Besides the 252 cases of bacterial endocarditis and the 80 of osteomyelitis, there were 50 cases of septicemia or pyemia, which made a total of 382 such blood stream infections. Myocardial abscesses were present in 29 (7.5 per cent).

COMMENT

This study of autopsies on patients with myocardial abscesses serves only to emphasize the importance of the underlying infection and to reemphasize the potential severity of so-called minor surface infections. Little can be added to the subject of bacterial endocarditis. However, an aspect of acute osteomyelitis is revealed which has not been mentioned previously. It should be looked on with the same view that the physician looks at bacterial endocarditis, as an extremely serious and fatal infection.

Although there is disagreement on the treatment of acute osteomyelitis, there is no question that it can be treated well if the diagnosis is made early. Grasso [6] contends that it is not a primary disease of the bone but a localization of general septicemia or septicopyemia and should be treated as such. Key [7] advocates early operative treatment, while Wilson [8] holds that the surgeon should not be stampeded into an expedient operation simply because an abscess develops within the substance of a bone of a patient with septicemia. The mortality from septicemia associated with bone infections can be considerably reduced if sulfathiazole is employed in conjunction with relatively early adequate surgical drainage of the local lesion.[9] Results obtained at Duke Hospital in the treatment of acute osteomyelitis with staphylococcic septicemia suggests that, with the exception of sulfathiazole, the sulfonamide compounds are contraindicated.[10] Wilensky [11] stated that in actual practice the treatment of osteomyelitis with one of the sulfonamide compounds has not produced the startling results obtained in some other conditions, notably pneumonia. The results have been relatively good in the phase of general infection (bacteremia).[12] Mahorner and Crain [13] feel that the important features responsible for the higher mortality are unjustified emergency operations without proper preoperative care and failure to reestablish preoperatively a normal physiologic state by fluid and electrolyte replacement and blood transfusions. The report of Hoyt, Davis and Van Buren [14] confirms Grasso's contention; in 8 cases of acute staphylococcic osteomyelitis in which treatment with sulfathiazole without operation had been given, the end results were perfect; the bacteremia, as evidenced by positive blood cultures, was controlled by the administration of sulfathiazole without incision and drainage of the local abscess.

Whatever the outcome of the controversy on the treatment of acute staphylococcemia, it can safely be said that the introduction of the sulfonamide compounds has renewed and sustained great interest in the entire subject, with definitely improved results. Regardless of the cause of the staphylococcic bacteremia, sulfathiazole appears to be the best therapeutic agent available at present for this type of infection, and it can be administered with a reasonable degree of safety.[15]

SUMMARY

Abscesses in the myocardium are rare, as only 29 cases (0.2 per cent) were noted in a series of 14,160 autopsies at the Cook County Hospital. In itself it is not important, but it places proper emphasis on the significance of the underlying infection. The staphylococcus was the common offender in 23 cases (79.3 per cent). Among these cases bacterial endocarditis and acute osteomyelitis were found to be the main underlying diseases. The latter, along with such causes as cellulitis, acute tonsillitis, pneumonia and mastoiditis, are now more amenable to treatment, especially with sulfathiazole. These causes of myocardial abscess, particularly acute osteomyelitis, should be viewed in the same light as bacterial endocarditis, but with a greater degree of optimism, for with early diagnosis and proper treatment a favorable outcome is the end result.

310 South Michigan Avenue.

6. Grasso, R.: Hematogenic Acute Osteomyelitis, Treatment by Expectation, Policlinico (sez. prat.) **48**: 601 (April 7) 1941.
7. Key, J. A.: Early Operative Treatment of Acute Hematogenous Osteomyelitis, Surgery **9**: 657 (May) 1941.
8. Wilson, J. C.: Delayed Operative Treatment of Acute Hematogenous Osteomyelitis, Surgery **9**: 666 (May) 1941.
9. Penberthy, G. C., and Weller, C. N.: Chemotherapy as an Aid in Management of Acute Osteomyelitis, Ann. Surg. **114**: 129 (July) 1941.
10. Baker, L. D.: Acute Osteomyelitis with Staphylococcus Septicemia, South. M. J. **34**: 619 (June) 1941.
11. Wilensky, A. O.: Value of Chemotherapy in the Treatment of Osteomyelitis, Arch. Surg. **44**: 234 (Feb.) 1942.
12. Wilensky, A. O.: Chemotherapy in Osteomyelitis, Am. J. Surg. **57**: 76 (July) 1942.
13. Mahorner, Howard, and Crain, A. P., Jr.: Acute Hematogenous Osteomyelitis, Ann. Surg. **115**: 790 (May) 1942.
14. Hoyt, W. A.; Davis, A. E., and Van Buren, George: Acute Hematogenous Staphylococcic Osteomyelitis; Treatment with Sulfathiazole Without Operation, J. A. M. A. **117**: 2043 (Dec. 13) 1941.
15. Spink, W. W.; Hansen, A. E., and Paine, J. R.: Staphylococcic Bacteremia: Treatment with Sulfapyridine and Sulfathiazole, Arch. Int. Med. **67**: 25 (Jan.) 1941.

Col. William S. Culpepper, M. C., commanding officer of the station hospital, gave his full cooperation in this study.

TARGET CELLS IN POSTVACCINAL JAUNDICE

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SANITARY CORPS, ARMY OF THE UNITED STATES
and
MAJOR GEORGE KAPLAN
MEDICAL CORPS, ARMY OF THE UNITED STATES

In 1937 Haden and Evans [1] described red blood corpuscles shaped in the form of a "Mexican hat" or a "sugar loaf." They claimed that these cells occur only in sickle cell anemia. A year later Barrett,[2] in an extensive study, showed the presence of these bodies (which he named "target corpuscles") in such varied conditions as obstructive jaundice, a "hypochromic" group of anemias in which the color index was not more than 0.8, steatorrhea, and following splenectomy. An interesting case of erythroblastic anemia in a young adult with target cells was described by Dameshek.[3] In a more recent paper Singer, Miller and Dameshek [4] discussed hematologic changes following splenectomy in man with particular reference to target cells and their physicochemical behavior.

THE TARGET CELL

In Wright's stained preparations, these red cells may vary from 7 to 10 microns in diameter. A small central mass of hemoglobin surrounded by a clear area, which in turn is circumscribed by an additional ring of hemoglobin, makes up the picture of the target cell. Often there is an apparent bridge between the central mass and the peripheral ring of hemoglobin (fig. 1). It is the position which the cell assumes as it turns that gives the illusion of the bridge. This can be readily demonstrated in the dark field. Barrett's [2] comparison with a "squat collar button" compares more favorably as a model for the description of these cells rather than the "Mexican hat" or "sugar loaf." In all our cases a "heparinized wet preparation" of venous blood was examined with the dark field microscope. The target cells were easily demonstrated in every instance. Here a more typical target effect can be observed (fig. 2).

1. Haden, R. L., and Evans, F. D.: Sickle Cell Anemia in the White Race: Improvement in Two Cases Following Splenectomy, Arch. Int. Med. **60**: 133-142 (July) 1937.
2. Barrett, A. M.: Special Form of Erythrocyte Possessing Increased Resistance to Hypotonic Saline, J. Path. & Bact. **46**: 603-618 (May) 1938.
3. Dameshek, William: "Target Cell Anemia": Anerythroblastic Type of Cooley's Erythroblastic Anemia, Am. J. M. Sc. **200**: 445 (Oct.) 1940.
4. Singer, Karl; Miller, E. B., and Dameshek, William: Hematologic Changes Following Splenectomy in Man with Particular Reference to Target Cells, Hemolytic Index and Lysolecithin, Am. J. M. Sc. **202**: 171-187 (Aug.) 1941.

We are in agreement with the observations of Barrett [2] and Dameshek [3] as to the increased resistance of target cells to hypotonic saline solution. In 2 of our cases the actual blood smear count totaled as high as 40 per cent target cells. In 1 of these cases hemolysis was not complete in dilutions as low as 0.14 per cent of saline solution. Normally, hemolysis as

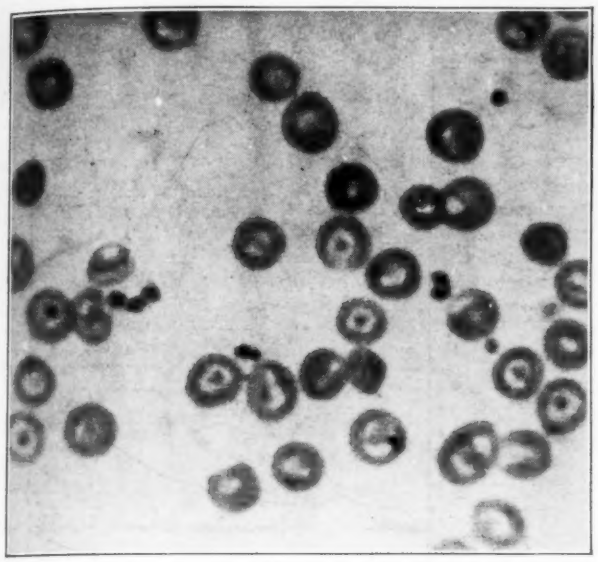

Fig. 1.—Appearance of target cells, oil immersion.

given by Sanford [5] is complete at a concentration of 0.32 to 0.34 per cent. In 73 per cent of our cases a definite increase of resistance to hypotonic salt solution was noted.

From June to September 1942, 22 patients with postvaccinal (yellow fever) jaundice were admitted to the Medical Service of Camp Stoneman Station Hospital. In a routine blood smear of the very first patient with jaundice, a high percentage of target cells was seen. Repeated blood smears from this patient continued to show these bizarre cells. All of our subsequent postvaccinal icteric patients were followed in a like manner

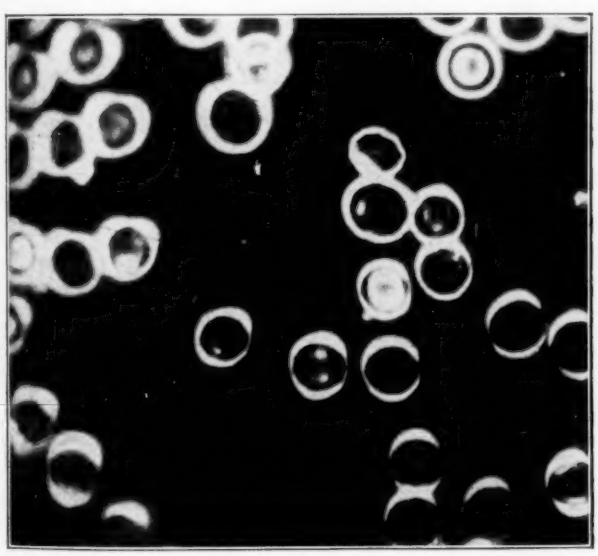

Fig. 2.—Appearance of target cells, oil immersion, dark field.

and showed a similar pattern. These cells diminished in number as the icteric index decreased. However, a parallelism did not exist between the number of target cells and the severity of the icterus. When the icteric index became normal, few or no target cells were found. The smears also showed varying degrees of macrocytosis, which has been commonly observed in jaundice in the past.

In a special survey conducted by the Surgeon General's Office [6] a thorough investigation of the outbreak of jaundice in the Army was made. This included studies of liver function, kidney function and bile pigment excretion along with the usual laboratory procedures. Our findings in this respect are similar to that given by the Surgeon General and are therefore omitted from this report.

COMMENT

The origin of target cells is not within the scope of this report. The explanation of the aforementioned investigators as to the mechanism of the increased resistance of these corpuscles (target cells) can best be stated by quoting Barrett: "The target cell is thinner than the normal red cell and thus could imbibe more water before bursting (hemolyzing) in hypotonic solutions of salt."

It is our belief that target cells are more prevalent than heretofore recognized.

SUMMARY

1. Twenty-two cases of postvaccinal (yellow fever) jaundice were studied.

2. An unusually high percentage of target cells in circulating blood in these cases has been found.

3. An increased resistance of the red cells to hypotonic salt solution was shown by 73 per cent of the cases.

4. The use of a heparinized preparation of venous blood with the aid of the dark field microscope offers an excellent means of studying these cells.

5. Todd, J. C., and Sanford, A. H.: Clinical Diagnosis by Laboratory Methods, ed. 9, Philadelphia, W. B. Saunders Company, 1942, p. 320.

ACUTE NEPHROSIS COMPLICATING TWO DAY ARSENIC AND FEVER THERAPY FOR EARLY SYPHILIS

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A one day treatment for early syphilis has been reported by Rose, Simpson and Kendell.[1] They employed artificially induced fever for ten hours in combination with mapharsen from 120 to 240 mg. in the treatment of 23 patients. The only evidence of intoxication reported for these patients was transient increase in serum bilirubin or mild observable jaundice.

We have administered a two day treatment to 48 patients, consisting of two intravenous injections of mapharsen of 100 mg. and 60 mg. on the first day followed on the second day with two injections of 60 mg. each and artificially induced fever to about 105.8 F. for seven hours.

This report is concerned with 4 patients of our group who developed acute nephrosis. The clinical course of all 4 is shown graphically. An additional 4 patients developed severe albuminuria and azotemia of brief duration without fixed specific gravity of the urine. All recovered from the acute episode.

The absence of significant evidence of dehydration and the prompt loss of renal concentrating capacity in the 4 cases reported in the accompanying charts indicates that the azotemia was due to severe intrinsic renal damage rather than to hemoconcentration. The incidence of this renal complication in our group was 8.3 per cent. The chief subjective symptoms of our patients were nausea and vomiting. One patient was semistuporous for about twelve hours. Two had anuria of about twenty-four hours' duration followed by oliguria persisting for a week or more. The other 2 had definite oliguria, but they would have been overlooked if daily urine analyses and repeated blood chemistry tests had not been done routinely

As far as we know renal damage has not been reported for patients treated intensively with mapharsen alone. Large numbers of patients have now been treated with massive arseno-

6. Surgeon General's Report: The Outbreak of Jaundice in the Army, J. A. M. A. **120**: 51 (Sept. 5) 1942.

From the Departments of Dermatology and Syphilology and Medicine, New York University College of Medicine, and the Department of Dermatology and Syphilology, Third Medical Division (New York University), Bellevue Hospital.

1. Rose, I. M.; Simpson, W. M., and Kendell, H. W.: Treatment with a Single Intensive Session of Combined Fever-Chemotherapy, Ven. Dis. Inform. **23**: 411 (Nov.) 1942.

therapy [2] but we have found no report of serious acute renal damage. In a series of 280 patients treated for early syphilis at Bellevue Hospital in a period of six to ten days with a total of 0.66 to 1.2 Gm. of mapharsen alone no renal damage resulted. Seventy-three patients in this series had two injections of 100 mg. of mapharsen daily for six days. Among 773 patients with early syphilis treated at Bellevue Hospital in a period of six to ten days with combined mapharsen and fever induced by typhoid vaccines, 1 had a transient hematuria with no azotemia. Albuminuria developed in many of the patients in this group during the days they received typhoid vaccine but there was no evidence of serious kidney damage. It is evident, however, that the combination of mapharsen with electropyrexia prolonged over six hours may cause acute kidney damage.

REPORT OF CASE

For the sake of brevity a detailed case history of only 1 patient is given. Laboratory findings of 4 are shown in the charts.

Patient A. B., shown graphically in chart 1, was a Negro woman aged 21. She was admitted to Bellevue Hospital on Nov. 10, 1942; the diagnosis was secondary syphilis.

The urine on admission was normal with a specific gravity of 1.030. The blood nonprotein nitrogen was 34 mg. per hundred

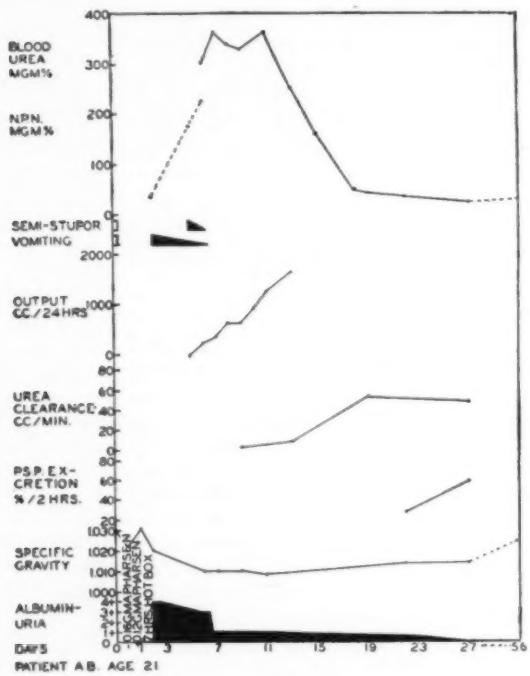

Chart 1.—Course in case 1.

cubic centimeters, the blood pressure 110 systolic and 80 diastolic. The hemoglobin was 90 per cent (Sahli), the red blood cells 4,200,000, the white blood cells 8,150 with 45 per cent polymorphonuclear cells, 41 per cent lymphocytes, 1 per cent monocytes, 2 per cent myelocytes and 1 per cent eosinophils.

Antisyphilis therapy consisted on November 12 of 0.1 Gm. of mapharsen intravenously at 8:30 a. m. and 0.06 Gm. of mapharsen intravenously at 3 p. m., and, on November 13, seven hours of artificial fever at 105.8 F., 0.06 Gm. of mapharsen thirty minutes after the temperature reached 105 F. and 0.06 Gm. of mapharsen two hours before the cabinet was opened.

During the fever session she received 5.3 Gm. of sodium chloride and 3,000 cc. of water. There were no complaints

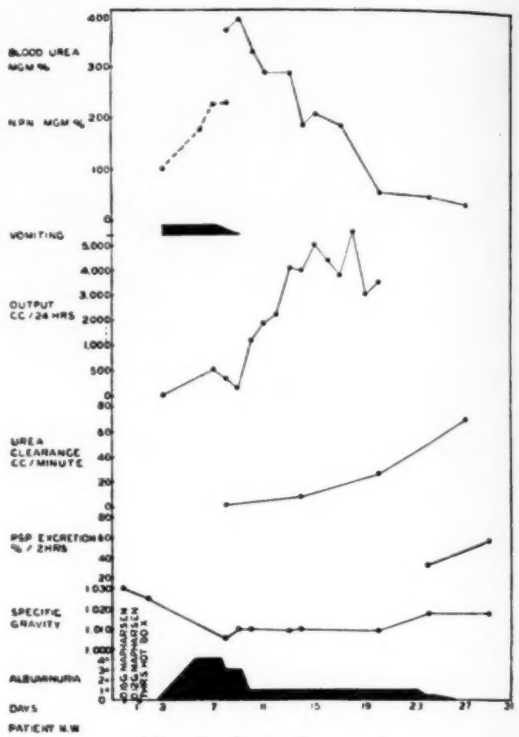

Chart 2.—Course in case 2.

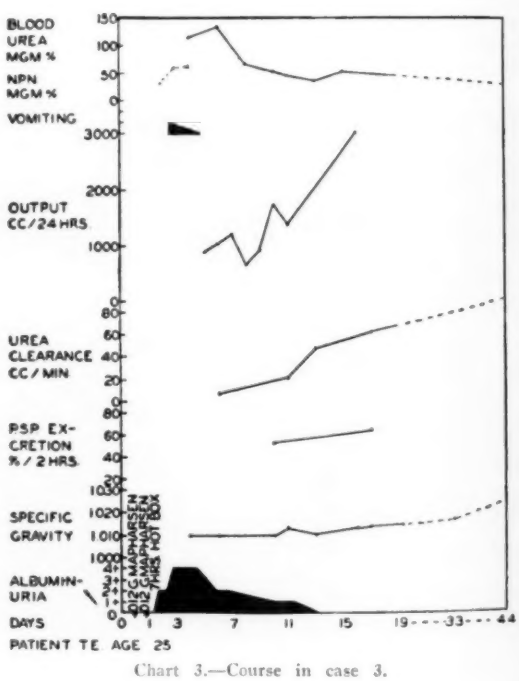

Chart 3.—Course in case 3.

during the treatment. She vomited once. The blood pressure after the electropyrexia was 100/72.

On the day following the artificial fever the nonprotein nitrogen content of the blood was 35 mg. per hundred cubic centimeters and the blood chlorides 600 mg. per hundred cubic centimeters. Examination of the urine showed a specific gravity of 1.020, severe albuminuria and many granular casts.

2. Leifer, William; Chargin, Louis, and Hyman, H. T.: Massive Dose Arsenotherapy of Early Syphilis by Intravenous Drip Method: Recapitulation of Data, J. A. M. A. **117:** 1154 (Oct. 4) 1941. Bowman, G. W., and Sheehan, F. G.: Massive Arsenotherapy (with Neoarsphenamine and Mapharsen), J. Indiana M. A. **34:** 665 (Dec.) 1941. Thomas, E. W., and Wexler, Gertrude: Rapid Treatment of Early Syphilis with Multiple Injections of Mapharsen, Am. J. Pub. Health **31:** 545 (June) 1941. Shaffer, L. W.: Massive Arsenotherapy in Early Syphilis, J. Michigan M. Soc. **40:** 527 (July) 1941. Elliott, D. C.; Baehr, George; Shaffer, L. W.; Usher, G. S., and Lough, S. A.: Evaluation of Massive Dose Therapy of Early Syphilis, J. A. M. A. **117:** 1160 (Oct. 4) 1941. Sadusk, J. F., Jr.; Craige, Branch, Jr.; Brookens, Norris; Poole, A. K., and Strauss, M. J.: Massive Dose Arsenotherapy with Mapharsen of Early Syphilis by Intravenous Drip Method: Toxicology, Clinical Observations and Therapeutic Results, Yale, J. Biol. & Med. **14:** 333-335 (March) 1942. Rattner, Herbert: Five Day Treatment (Using Mapharsen), Illinois M. J. **81:** 29 (Jan.) 1942. Kaplan, B. F.: Intravenous Drip Method in Intensive Arsenotherapy with Mapharsen, Arch. Dermat. & Syph. **45:** 941 (May) 1942. Prats G., Florencio; Varas, Luis Infante, and Haraszti, Esteban: Massive Arsenotherapy of Syphilis by Continuous Drip Method: Preliminary Report on 271 Patients Treated with Mapharsen, ibid. **45:** 885 (May) 1942.

She vomited frequently for the first three days following the fever therapy and then once a day for the next three days. The fourth day after treatment she voided no urine. On this day the nonprotein nitrogen content of the blood was 175 mg. per hundred cubic centimeters. The following morning 75 cc. of urine was obtained by catheter. The urine specific gravity was 1.010. It contained definitely increased protein, occasional granular casts and 6 to 8 red blood cells per high power field. The patient was semistuporous. There was no edema; the retinas were normal, the blood pressure 138/76. The blood nonprotein nitrogen was 225 mg. per hundred cubic centimeters, the urea 304 mg. per hundred cubic centimeters and creatinine 6 mg. per hundred cubic centimeters. The hemoglobin was 70 per cent, the red blood cells 3,680,000, the white blood cells 15,000, with 62 per cent polymorphonuclear cells, 22 per cent lymphocytes and 16 per cent monocytes. The carbon dioxide combining power of the blood was 32 volumes per cent. She was given an infusion of 2,000 cc. of 5 per cent dextrose in isotonic solution of sodium chloride to which 5 Gm. of sodium chloride was added. That afternoon she voided 150 cc. of urine. In the next two days she was given similar infusions. Beginning with the third day, clinical improvement was rapid. The

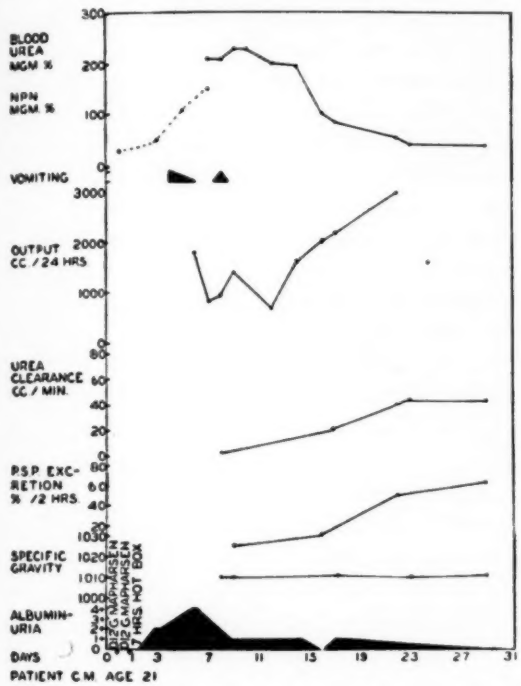

Chart 4.—Course in case 4.

urinary output gradually increased and on the eleventh day after the fever treatment it was normal.

On the sixth day after treatment a catheterized specimen of urine showed 1 plus protein and 2 to 10 red blood cells per high power field. Until the eighteenth day after fever therapy there was a faint trace of protein and occasional red blood cells in the urine. Fixed specific gravity at 1.010 persisted until the patient was discharged on the twenty-seventh day after treatment. Renal function tests showed a maximum specific gravity of 1.015 and a maximum dilution of 1.010 on the twentieth and twenty-sixth days. On the eighth day the standard urea clearance was 2 cc. per minute. The maximum urea clearance on the twelfth day was 9.7 cc. per minute and on the eighteenth day 55.3 cc. per minute. On the twenty-sixth day the standard urea clearance was 34.6 cc. per minute. The phenolsulfonphthalein excretion for two hours was 28 per cent on the twentieth day after fever treatment and 58.1 per cent on the twenty-sixth day.

The nonprotein nitrogen content of the blood and the blood urea remained very high until the tenth day after treatment. Thereafter they gradually fell, becoming normal in about three weeks after the treatment for syphilis.

On Dec. 10, 1942 the patient was discharged. Her blood pressure was 100/60. On Jan. 7, 1943 the blood nonprotein nitrogen was 27 mg. per hundred cubic centimeters and the urine was normal with a specific gravity of 1.024.

SUMMARY

Forty-eight patients with early syphilis have been treated with mapharsen and artificially induced fever.

Of this group 4 patients, promptly after treatment, developed an acute renal lesion with severe functional impairment. All patients recovered from the acute episode.

While no speculation has been attempted, the complication appears to be an acute nephrosis induced by the combination of arsenic and prolonged artificial fever.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PURSUANT TO THE ACTION TAKEN BY THE COUNCIL AT ITS LAST MEETING (J. A. M. A. **121:** 838 [MARCH 13] 1943) THE COUNCIL IS WITHHOLDING FROM THIS COLUMN STATEMENTS ON TESTS AND STANDARDS, ACTIONS, USES AND DOSAGE OF NEWLY ACCEPTED DRUGS WHICH MIGHT BE OF INTEREST TO THE ENEMY. THUS, SUCH STATEMENTS FOR SUCCINYLSULFATHIAZOLE ARE OMITTED UNTIL A FUTURE DATE. THEY WILL APPEAR IN THE COUNCIL PUBLICATION NEW AND NONOFFICIAL REMEDIES AND MAY BE OBTAINED FROM THE COUNCIL OFFICE ON REQUEST.

AUSTIN E. SMITH, M.D., Secretary.

CALCIUM LEVULINATE.—The dihydrated normal calcium salt of levulinic acid.—$(CH_3COCH_2CH_2COO)_2Ca.2H_2O$.—M. W. 306.32.

Actions and Uses.—Calcium levulinate is used to obtain the therapeutic effects of calcium. It may be administered orally or intravenously and is virtually nonirritant for subcutaneous or intramuscular injection.

Dosage.—By injection, for adults, 1 Gm. daily or on alternate days; for children, 0.2 to 0.5 Gm. Orally, for adults, 4 to 5 Gm. three times a day; for children, 1 to 2 Gm. three times a day.

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Hypoloid Calcium Levulinate Injection 10% Solution: 1 Gm. (15½ grains approximately) in 10 cc.

PAUL LEWIS LABORATORIES, INC., MILWAUKEE

Calcium Levulinate *(Powder):* bulk. Packed in 1, 5, 10, 25, 50 and 100 pound packages.

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DEXTROSE (See New and Nonofficial Remedies, 1942, p. 418).

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THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1942, p. 555).

The following additional dosage form has been accepted:

WHITE LABORATORIES, INC., NEWARK, N. J.

Tablets Thiamine Hydrochloride: 10 mg.

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The following additional dosage form has been accepted:

DRUG PRODUCTS CO., INC., LONG ISLAND CITY, N. Y.

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SATURDAY, JULY 17, 1943

FEASIBILITY OF BACTERIAL WARFARE

The Geneva Disarmament Conference of 1932 considered bacterial warfare serious enough to prohibit its use. This action contributed to the popular fear of pathogenic micro-organisms as effective military weapons. To allay this fear come two timely reprintings of the classic paper by Col. Leon A. Fox [1] of the U. S. Army Medical Corps, which summarize the current opinion of military experts.

Threatened introduction of new weapons or methods of warfare has often had to overcome opposition based on ethical, religious or humanitarian grounds. The early use of gun powder had to overcome opposition of this type. Military history, however, teaches that a weapon has never been abandoned for such reasons unless displaced by more effective weapons or until adequate countermeasures have been developed. Military history also reveals that epidemics were often the determining factor in past wars. In many campaigns contagious diseases caused such great loss of life and such large numbers of noneffectives on both sides as to lead to a stalemate. In other campaigns great differences in the degree to which the two opposing armies reacted to such epidemics occurred.

The major military pests of the past have been the enteric fevers, typhus, bubonic plague and smallpox, with influenza, the pneumonias, malaria, measles, meningitis and syphilis playing a minor role. Popularly it is often assumed that these diseases would be particularly effective military weapons. However, fully virulent causative agents cannot be prepared in large quantities and cannot be introduced in adequate doses into the bodies of unprotected and nonimmunized enemy populations. The essential problem of bacterial warfare from an offensive point of view is therefore the problem of mass production of military pathogens and of devising safe and effective methods of inoculating the enemy. The whole group of enteric infections, for example, could probably never be successfully used as instruments of warfare. Real epidemics of these diseases are traceable only to infected drinking water. While contamination of reservoirs and municipal storage tanks is militarily feasible, such contamination would be largely ineffective because of routine filtration or chlorination methods. Modern sanitary methods, therefore, should be adequate countermeasures against this type of bacterial warfare.

Among the respiratory infections, a number of maladies are serious enough to be effective if ways of using them can be devised. The two diseases of this group most frequently mentioned are influenza and meningitis. In neither disease could the infective agent be prepared in sufficient quantities, virulence or stability for military use. The meningococcus, for example, is so delicate that it rapidly dies when exposed for even a few hours to temperature much below that of the human body. The only feasible methods of introducing meningitis into opposite forces would be by human carriers. This would be hardly worth while, since any military aggregation of great size already has so many meningitis carriers (anywhere from 2 to 30 per cent) that the introduction of a few more carriers would be of little moment.

The use of insect borne diseases has also been repeatedly mentioned in the press, bubonic plague being the most frightful example. Possibly airplanes flying low could drop recently infected rats on opponent terrains. Even this, however, would probably not start an epidemic. Plague has been more or less endemic as a rodent disease on our own Pacific Coast for over a generation, yet there have been no local human cases in this region sufficiently numerous to be designated as epidemic. Only 6 cases of plague developed in 1924 among European troops stationed in the Punjab, in spite of the fact that 500,000 cases developed in the indigenous population.[2] Typhus also would be ineffective, since control of typhus is a question of louse control.

Tetanus, gas gangrene and anthrax have been suggested as particularly effective military pathogens,[3] since they are caused by resistant, spore forming bacteria capable of prolonged periods of viability without loss of virulence outside the animal body. These microorganisms, however, do not produce epidemics even though they are of military interest as wound invaders. Effective methods of preventing and treating wound infections have been developed. Since wound invaders are omnipresent in nature, the indiscriminate distribution of a few additional wound invaders would not add appreciably to the present dangers of combat.

One of the commonest scares concerns the dissemination of "deadly bacterial toxins," of which botulinus toxin seems to be the pseudoscientific favorite. True,

1. Fox, Leon A.: Mil. Surgeon **90**: 563 (May) 1942, reprinted in J. Lab. & Clin. Med. **28**: 539 (Feb.) 1943.

2. Pentler, C. F.: Some Thoughts on Bacteriological Warfare, Graduate Thesis, Department of Biology and Public Health, Massachusetts Institute of Technology.

3. Gill, C. A.: The Genius of Epidemics, London, Baillière, Tindall & Cox, 1928.

"an airplane can carry sufficient (botulinus) toxin to destroy an entire city," provided a carefully measured lethal dose of this toxin is administered orally, subcutaneously or intrarectally to each inhabitant of that city. The release of food materials contaminated with tremendous amounts of this toxin might conceivably cause a wholesale local destruction of rodents and sparrows. At most the number of human casualties would be negligible. Bacterial toxins like bacteria are readily destroyed by heat and are therefore inactivated by cooking. They are wholly unsuited for use in shrapnel or other projectiles.

Bacterial warfare is often extended in popular literature to include the use of boll weevils, corn borers and other agricultural pests. Most of these pests, however, take several years to propagate and invade a sufficient terrain to be effective economically. This would violate one of the fundamental laws of military science, since it might merely interfere with postwar economics, reducing the ability of a conquered nation to pay indemnities.

Summarizing his argument, Colonel Fox concludes that there are "practically insurmountable technical difficulties preventing the use of biological agents as effective weapons of warfare." In this he confirms the previous opinion of numerous German bacteriologists, who, five years before the first war, were assigned the task of suggesting safe and effective weapons of bacterial warfare. Ehrlich, for example, replied that "nothing [he] could suggest would be of more than a nuisance value to the enemy and might even be a source of danger to our own troops." [4]

It is hoped that Colonel Fox's paper will be as widely quoted in the popular press as have been the numerous frightening hypotheses that it contradicts.

4. Manwaring, W. H.: Personal communication, 1909.

PSYCHOANALYSIS AND THE SCIENTIFIC METHOD

In 1928 the late Dr. Joseph Jastrow [1] declared that the freudian movement was rejected by the medical profession as unorthodox. "Its entire history is unfortunate," he said. "It was born in the clinic—an unfortunate birthplace for any doctrine with so wide and so personal an application; it was reared in distracting controversy; it traveled on the visé of psychoanalysis—a procedure as open to abuse as any narrow cult, and more so." A vast literature on freudianism and the psychoanalytic method, some of it bitterly derogatory, has appeared. Now, some thirty-seven years since the freudian theory was first brought to the United States by an article published by Boris Sidis in the *Journal of Abnormal Psychology*, an unprejudiced opinion of freudianism as a theory and psychoanalysis as an instrument is still difficult to secure.

1. Jastrow, Joseph: Relation of Medicine to Psychology, J. A. M. A. **32:** 720 (March 2) 1929.

The aim of psychoanalysis as Freud conceived it "was not to tell people unpleasant truths about themselves but to cure patients by giving the integrative powers of their rational and conscious personality an opportunity to deal with those psychologic forces which were excluded from their conscious mind." [2] The criteria for judging freudianism as a scientific contribution must be the same as those employed in judging any other scientific discipline. The features which have caused the greatest disrepute to fall on psychoanalysis are, first, the self-imposed requirement of justifying psychoanalysis by the results of treatment and, second, the preoccupation of freudians with sex. Other phases of medical science have not been forced to justify their recognition by the results of treatment; this attempt to cite "cures" as vindication may have hampered the true function of psychoanalysis. Indeed, when the results of therapy have been analyzed by objective observers (e. g. Kessel and Hyman [3]), grave question as to the value of the psychoanalytic method in treatment has arisen. As far as preoccupation with sex is concerned, the strong motivating force of sex drives has never been doubted, but it is questionable whether this affects human behavior as much quantitatively as has been commonly claimed by most psychoanalytic workers. Indeed, a recent application of psychoanalysis to the problem of the Negro [4] suggests that sex blockages play a comparatively small part in their motivation.

Unique in psychoanalysis has been the requirement that those who wish to evaluate freudianism must themselves be psychoanalyzed. Of lesser importance is the divergence of most of those in the field of psychoanalysis from the usual custom of the medical profession regarding the collection of fees from other members of the profession.

Psychoanalysis has a nomenclature and diction that have been characterized as an unintelligible jargon. True, mathematics, physics and chemistry employ special symbols. It should be possible to make the language of any science understandable, at least with the help of a dictionary. A sentence such as the following, however, from a recent article in the field of psychoanalysis is without value to the uninitiated and its real significance even to those actively working in the field may be questioned: "This ego-feeling cathexis in turn depends on the compatibility of the single element with the whole ego unity."

2. Sigmund Freud: 1856-1939, editorial, J. A. M. A. **113:** 1494 (Oct. 14) 1939.

3. Kessel, Leo, and Hyman, Harold Thomas: The Value of Psychoanalysis as a Therapeutic Procedure, J. A. M. A. **101:** 1612 (Nov. 18) 1933.

4. Holloman, Laynard L.: On the Supremacy of the Negro Athlete in White Athletic Competition, Psychoanalytic Review **30:** 157 (April) 1943.

Leaders in the field of psychoanalysis may easily meet some of the more serious criticisms. By abandoning unscientific procedures and by adapting itself to the rapid evolution of psychosomatic medicine as a specialty, freudianism will achieve greater scientific stature and fulfil more promptly its early promise of extending the borderlines of medical knowledge.

Current Comment

DETOXICATION BY LIVER EXTRACTS

In standardized and well controlled experiments on rats, Chamelin and Funk [1] found that extracts of whole liver reduced toxic action of sulfanilamide injected intraperitoneally in toxic quantities (400 mg. per kilogram). The liver extract had the same effect on the toxic action of diethylstilbestrol in rats. They found also that in mice injected with a strain of Streptococcus hemolyticus the survival rate was higher when the sulfonamide was combined with liver extract than when the drug alone was given; in other words, the liver extract diminished the toxicity of sulfanilamide without impairing its bacteriostatic action. Others [2] have found that whole liver or liver extracts counteract chronic intoxication by sulfonamide drugs. Whole liver extract apparently reduces the toxicity of two substances widely different in chemical structure and pharmacologic action. Both the evidence and the mechanisms by which these effects are secured invite further study.

AFFILIATED HOSPITAL UNITS FOR CIVILIAN DEFENSE

In THE JOURNAL for June 26, page 606, attention was called to the fact that two hundred and fifty-one hospitals and medical schools have been invited by the Surgeon General of the U. S. Public Health Service to organize affiliated hospital units of the Emergency Medical Service of the U. S. Office of Civilian Defense. Already more than one thousand physicians and dentists have applied for association with these units. Members of the staffs of affiliated units are commissioned in the inactive reserve of the U. S. Public Health Service, generally with ranks equivalent to those of captain, major or lieutenant colonel in the Army. They remain on inactive status except when there is an emergency arising from an air raid or other grave wartime disaster. When called to active duty they then receive the pay and allowances of officers of equivalent grade in the armed forces. They are expected to furnish service only in their own or neighboring states, and their obligation ceases at the termination of the present national emergency. The nature of the service is recognized by authorization to wear a lapel button which indicates that they have enlisted for emergency service. They do not wear a uniform until called to active duty and need not purchase one unless directed to do so when called to active duty. The Board of Trustees of the American Medical Association and the Directing Board of the Procurement and Assignment Service have authorized essential physicians to accept positions with these affiliated units. Some physicians have expressed the fear that acceptance of these commissions might involve them in a responsibility to the U. S. Public Health Service and might in some way encourage the acceptance by the profession of the proposed Wagner-Murray-Dingell bill. This is a misunderstanding. Those who become associated with affiliated units are under no obligation to serve in any other capacity, no matter what functions Congress may some day see fit to thrust on the U. S. Public Health Service. Duties of members of affiliated units are limited strictly to those which they have agreed to assume as a result of enemy action.

THE DOCTOR'S RESPONSIBILITY IN ABSENTEEISM

From a governmental agency engaged seriously in the war effort with employees who work under the rules and regulations of the Civil Service Commission comes a complaint that some physicians do not take with sufficient seriousness their responsibility in controlling unnecessary absenteeism. One of the rules of the Civil Service Commission concerns the number of days and the pay allowed as sick leave. A request for over three days' sick leave must be accompanied by a certificate from a physician. Absence from duty is not permitted because of a slight illness which would not prevent the performance of duty or endanger the health of others. Nevertheless, many employees are absent for three or more days and seem to be able to prevail on some physicians to write certificates. If these physicians knew that certificates which cover certain slight illnesses would not necessarily be honored they probably would not bother to issue them. In one instance just checked by the government agency concerned, a physician in Philadelphia issued a certificate to the effect that a worker was sick with gastroenteritis and was unable to work for a period of six days in the month of May, whereas investigation developed the fact that the person who submitted the certificate actually was working in another establishment on the dates stated and was attempting to obtain pay from two sources by requesting sick leave with pay from one of them. In the interest of the war effort and as a means of reducing inexcusable absences, physicians should refuse to issue certificates except in cases that can undoubtedly be considered to be of a serious nature and where there is no question but that the illness would incapacitate the person concerned for duty.

1. Chamelin, I. M., and Funk, Casimir: The Action of Liver Extracts in Counteracting the Toxic Effects of Diethylstilbestrol and Sulfanilamide, Arch. Biochem. **2**: 9 (April) 1943.

2. Schaefer, A. E.; McKibbin, J. M., and Elvehjem, C. A.: Nicotinic Deficiency Studies in Dogs, J. Biol. Chem. **144**: 679 (Aug.) 1942. Daft, F. S.; Ashburn, L. L., and Sebrell, W. H.: Biotin Deficiency and Other Changes in Rats Given Sulfanilylguanidine or Succinylsulfathiazole in Purified Diets, Science **96**: 321 (Oct. 2) 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

ARMY SPECIALIZED TRAINING PROGRAM FOR MEDICAL STUDENTS

The War Department has sent the following letter to the deans of all participating medical schools:

It is anticipated that training in medicine, dentistry and veterinary medicine under the Army Specialized Training Program will have been initiated by July 23 in all approved schools of medicine, dentistry and veterinary medicine, with the exception of the Woman's Medical College of Pennsylvania.

The assignment of enlisted men to the Army Specialized Training units at these institutions is, until further notice, restricted to those who are currently enrolled in these schools, to those who have been accepted by them for entering classes in medicine and dentistry and to accepted preveterinary students who are members of the Enlisted Reserve Corps.

The present restriction of selection for the continuation of preprofessional and assignment for professional training under the Army Specialized Training Program to the enlisted men who have assured individual vacancies in approved schools, through their acceptance for a future entering class, is necessitated by the fact that the freshman classes have been filled for 1943, the first half of 1944 and, in a number of instances, for late 1944. If these accepted applicants are in or enter active military service, they will be assigned to the Army Specialized Training Program for the completion of the prerequisite preprofessional training and subsequent timely transfer to the Army Specialized Training unit at the school by which accepted.

It is obvious, however, that the medical and dental schools cannot continue to fill their future freshman classes from civilian sources only: many students contemplating or preparing for the study of medicine or dentistry will have been inducted into one of the armed forces before acceptance by an accredited school is possible. If the supply of physicians and dentists, not only to meet the requirements of the armed forces but also for postwar civilian needs, is to continue beyond those now in or accepted for professional training, appropriate steps must be taken by the Army and by the Navy to assure necessary preparatory studies by qualified individuals in the military service, with a view to subsequent professional training in medicine and dentistry.

In order that detailed plans may be made for such premedical and predental training under the Army Specialized Training Program, it is necessary that the War Department determine the number of Army trainees who may be assigned to Army Specialized Training units at medical and dental schools in future freshman classes. The program of the Army will require at least 55 per cent of the vacancies in medical schools and 35 per cent of those in schools of dentistry. No trainees, other than as stated above, will be assigned to units at schools of veterinary medicine.

HOW MEDICAL STUDENTS WILL BE SELECTED

The purpose of this letter is to explore the possibility of a mutual agreement whereby carefully selected enlisted men not accepted as individuals by the individual schools of medicine or dentistry may be assigned to Army Specialized Training units thereat for professional training with a view to receiving the appropriate degree in medicine or dentistry, and appointment as first lieutenants in the Medical or Dental Corps of the Army of the United States.

The procedures involved in the selection and training of the enlisted men whom you will be requested to train in medicine or dentistry may be outlined briefly as follows:

On entering the Army, the recently inducted soldier is given certain classification tests, the results of which are entered on the record which accompanies him to the unit or installation in which he receives his basic military training, thirteen weeks in duration. Those with certain high scores will there appear before the Army Specialized Training Program field selection boards for determination whether they should be assigned to this program for training at the college level. The actual field of such training and the academic level at which training should begin will be determined at the classification and assignment unit to which the selected soldiers are first assigned (Specialized Training and Reassignment Unit, referred to as a STAR Unit).

From the STAR unit candidates who are manifestly suitable for or interested in the study of medicine or dentistry will be transferred to an appropriate training unit to begin preprofessional instruction at the basic level. The preprofessional curriculum of the first two terms, of twelve weeks each, is common to that followed by trainees tentatively selected for engineering studies: mathematics, physics, general chemistry, English, and so on.

It is during the second term that the real selection for preprofessional training is made, with a view to subsequent training in medicine or dentistry. Representatives of approved schools of medicine and dentistry will participate in this selection. It is on them that the War Department is depending for the most careful determination of the enlisted men who should continue training in preprofessional studies. Since premedical and predental training, per se, is of little value in the military service, attrition must be held to the minimum. At this level the trainees not considered fully qualified, especially as regards fitness and aptitude for and attitude toward the study and practice of medicine and dentistry and service as officers in the Medical or Dental Corps of the Army of the United States, may be considered for training in other fields.

The trainees selected for future training in medicine or dentistry begin, in the third term, their biologic studies. These continue through term IV and term V, the last term. Organic chemistry and psychology are added in the fourth and fifth terms. In these two terms eight semester hours are available for subjects selected by the institution based on the special aptitude and interest of the trainee. This will permit a brief refresher course in a modern foreign language for trainees who have had appropriate previous instruction. It has not been considered possible to include such a course as a prescribed subject throughout the five terms.

PROGRESS OF TRAINEES WILL BE CHECKED

The progress of the premedical trainee will be checked both by the usual faculty examinations and also by periodic nationwide tests. The enlisted men who satisfactorily complete the premedical curriculum will be considered available for transfer to Army Specialized Training units for further training in medicine or dentistry. Such assignments must necessarily be governed by timely regional vacancies. The Army trainee will not make application for matriculation nor will he be accepted individually for a vacancy reserved for the War Department. His fitness for the study of medicine or dentistry has been determined. If recommended at the completion of preprofessional training he will be academically qualified. If it is proved that he cannot continue satisfactory progress in his medical or dental studies, he will be relieved from the Army Specialized Training Program for assignment to other duties.

While it is felt that in the future the complete task of preparing physically qualified male students for the study of

medicine or dentistry will devolve principally on the Army or the Navy, it is certain that premedical and predental students will continue to enter the military service at various academic levels. At the completion of their basic military training these individuals must be given serious consideration for the continuation of their preprofessional training and subsequent professional training under this program. The selection of these enlisted men for such training will be made at STAR units and must be conducted with the same care as, indeed with even greater care than, that applied to trainees whose complete collegiate training has been under either the Army or the Navy program. Separate curriculums have been arranged for such trainees.

CONTRACTS WITH WAR DEPARTMENT

Within the near future negotiations will be begun with your institution for a contract with the War Department for the training of enlisted men in medicine or dentistry under the Army Specialized Training Program. This contract will contain provisions whereby the school will agree to train the enlisted men currently enrolled and those who have been accepted by the school for certain entering classes. It will also stipulate that, for the freshman class of the academic session agreed on by you and the negotiation officer, and for subsequent entering classes, you will make available to the War Department a specified number of vacancies for Army trainees. The number desired by the War Department represents, as already stated, approximately 55 per cent of the first year classes in medicine, 35 per cent of those in dental schools. The Navy is, I understand, requesting 25 per cent of such vacancies in medical schools, 20 per cent in dental schools.

Because of the necessity of assigning Army trainees to fill these vacancies on a strictly numerical rather than on a name basis, no assurance can be given that individual students accepted by you for classes in which a definite number of vacancies have been reserved for the War Department will be assigned to the Army Specialized Training unit at your school. It is realized that such a policy will limit the personal selection of medical and dental students which has proved so satisfactory and successful in previous years. However, no plan whereby individual assignment to these units may be effected appears feasible.

The transfer of medical or dental trainees from one unit to another is not contemplated, except, of course, in the case of medical trainees who have successfully completed their training in the schools of the basic medical sciences. It is felt that such trainees may advantageously be transferred as individuals, and to this end it is requested that arrangements now in force between the deans of the various approved schools of medicine be continued.

The War Department and my division fully appreciate the wholehearted cooperation which has characterized the attitude of the medical and dental schools toward the Army Specialized Training Program. I feel confident that this radical departure from the admissions procedures previously in operation at your school may be effected without detriment to sound medical and dental education.

HERMAN BEUKEMA, Colonel, G. S. C.
Director, Army Specialized Training Division.

NEW HAMPSHIRE STAR UNIT SENDS TWENTY-FIVE STUDENTS TO YALE

Dr. Bennett F. Avery, dean of the School of Medicine at Boston University, and Dr. H. Houston Merritt, assistant professor of neurology at Harvard Medical School, visited the Specialized Training and Reassignment unit at the University of New Hampshire on July 2 to interview candidates for premedical, dental and veterinarian Army Specialized Training. The student soldiers had already been tested and classified by the STAR unit at the university as candidates for those branches of Army Specialized Training.

The New England schools of medicine are cooperating with the Army in the careful selection of medical, dental and veterinary trainees for further study in the Army Specialized Training. Dr. Avery, Dr. Merritt and Dr. George H. Smith, assistant dean of Yale University School of Medicine, make up the medical committee chosen to meet with the STAR unit in the First Service Command.

Each month, or whenever a group of candidates is ready, this committee sends two representatives to the STAR unit. The doctors study preparatory and college records of qualifying trainees and interview them personally to determine personality and character. Students selected for dental and premedical Army Specialized Training are those who, in the opinion of the committee, will not only be useful to the Army as dentists and doctors but will qualify with the medical profession as dentists and doctors after the war.

Drs. Avery and Merritt, when interviewed, agreed that through Army Specialized Training their profession would gain many valuable members who, as civilians, might never have been able to afford a college and medical education both because of lack of funds and because of their families' need of their immediate earnings. Under Army Specialized Training, premedical and medical students are paid by the Army while in training.

Col. George A. Pollin, commandant of the Army Specialized Training, Specialized Training and Reassignment and Reserve Officers Training Corps units at the University of New Hampshire, expressed satisfaction in the method evolved in the First Service Command for choosing candidates for Army Specialized Training, particularly for premedical training.

Twenty-five premedical students were sent from the STAR unit at the University of New Hampshire for Army Specialized Training at Yale University on July 1.

NEW BRIGADIER GENERALS

The War Department announced on July 1 that the President had recommended to the Senate, among others, that Col. Joseph E. Bastion, M. C., and Col. Percy J. Carroll, M. C., be given temporary promotions to the rank of brigadier general. Colonel Bastion was formerly chief of the medical branch of the Sixth Service Command in Chicago and was transferred to Battle Creek, Mich., to command the Percy L. Jones General Hospital, succeeding in that position Brig. Gen. Norman T. Kirk, who became Surgeon General of the Army on June 1. Colonel Carroll was born in Illinois and graduated from St. Louis University School of Medicine in 1914. He was commissioned first lieutenant in the medical corps of the regular army on Sept. 27, 1917 after having served in the medical reserve corps previously from Oct. 23, 1915.

COUNTY MEDICAL SOCIETIES AND THE CLINIC AT FORT CUSTER

Representatives of fourteen county medical societies, in all about 150 physicians, attended a clinic at Fort Custer, Michigan, on June 30, arranged by the army medical officers serving at the 1,500 bed station hospital. Col. John G. Slevin, former Detroit surgeon, the commandant, said that the idea of a military hospital presenting a clinic day for civilian physicians developed as a result of the curtailment of medical society meetings during the war; further, that a wealth of material is available in the larger military hospitals which, when presented by the highly qualified medical officers, fills a need in the community at this time for scientific instruction.

The medical clinic at Fort Custer was in charge of Lieut. Col. Frank B. Lusk, chief of the medical service at the station hospital and formerly professor of medicine at the Cook County Postgraduate School of Medicine, Chicago. The surgical clinic was in charge of Lieut. Col. Joseph W. Gale, professor of surgery in absentia at the University of Wisconsin School of Medicine.

In the afternoon a clinicopathologic conference was held under the direction of Major Joseph M. Looney, chief of the laboratory section at the station hospital and formerly director of the laboratory section at the Worcester State Hospital in Massachusetts.

NAVY

PROMOTIONS IN THE NAVY

The following medical directors in the U. S. Navy have received executive nomination for the rank of rear admiral, for temporary service, while serving as district medical officer as indicated to rank from June 25, 1943:

Edward Urbane Reed, 3d Naval District.
George Carroll Thomas, 11th Naval District.
William Leak Mann Jr., 13th Naval District.
Joseph John A. McMullin, 5th Naval District.
Richard Henry Laning, 1st Naval District.
Daniel Hunt, 12th Naval District.

The following lieutenants (HC) have been advanced to the grade of lieutenant commander (HC):

Carl A. Setterstrom.
Allen F. Bigelow.
Abraham T. Schwartz.
Benjamin W. Claggett.
Benjamin E. Irwin.
Edward G. Dennis.
Walter H. MacWilliams.
Norman L. Saunders.
Thomas E. Kent.
Jason H. Barton.
Ervin C. Eastman.
Charles P. Hines.
Corliss P. Dean.
Willie R. Joiner.
George A. Fox.

CONVALESCENT PSYCHIATRIC CENTERS

Certain facilities at the U. S. Naval Convalescent Hospitals at Sun Valley, Ida., Ahwahnee, Yosemite National Park, and Glenwood Springs, Colo., are now being used for the care and treatment of patients who have combat or operational fatigue. These neuroses are considered amenable to treatment by means of group psychotherapy. The treatment program planned for these hospitals covers a maximum of four to six weeks for each patient, and it is hoped that the majority can be returned to duty.

NAVY PERSONALS

Rear Adm. D. G. Sutton, MC, U.S.N., has been reassigned to the Division of Inspections in the Bureau of Medicine and Surgery and as medical inspector, Eastern Area.

Rear Adm. E. C. White, MC, U.S.N., has been reassigned as medical inspector in Central United States.

Lieut. Comdr. William A. Morris, formerly medical director at the Yonkers General Hospital, New York, reported for duty in June at the Naval Air Technical Training Center in Chicago.

CIVILIAN DEFENSE

NEW RECOMMENDATIONS ON TREATMENT OF BURNS AND WOUND INFECTIONS

The Medical Division of the Office of Civilian Defense announced on July 10 that it has revised the pamphlet "Treatment of Burns and Prevention of Wound Infections" to incorporate new technics that have been developed within the last year. The recommendations in this pamphlet are based on recent directions of the Committee on Chemotherapeutic and Other Agents and the Subcommittee on Burns of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Originally drawn up by these committees for the armed forces, the recommendations have been modified to adapt them to the problems involved in the treatment of civilian casualties.

Recommendations for the use of sulfonamides are accompanied by the observation that these drugs must be used more cautiously in the treatment of civilian wounds than is necessary in the care of military casualties for the following reasons:

"The injured may include individuals of all ages and with various types of preexisting disease, instead of a selected group of healthy young men. The possibility of toxic effects is therefore greatly enhanced. Moreover, it is assumed that in civilian injuries hospitalization will be possible in a relatively short time, whereas in military operations such is not always the case. This usually makes it possible to postpone all consideration of chemotherapy until the injured have been hospitalized. It is then possible to administer sulfonamides with better safeguards and to consider such contraindications as other pathologic conditions or known sensitivity to individual drugs. The dangers of dehydration can also be better prevented or overcome under such circumstances."

In a discussion of intra-abdominal wounds leading to perforation of the hollow viscera, the revised pamphlet advises sodium sulfadiazine as the drug of choice for parenteral administration, which is considered preferable to oral therapy during the first forty-eight hours. Sulfanilamide was recommended in the previous edition. Concentrated solutions of sodium sulfadiazine are not recommended for subcutaneous or intramuscular routes, but it is pointed out that weak solutions (0.5 per cent) may be used with little danger of sloughing of the tissues.

Special emphasis is placed on the danger of giving sulfonamide drugs to a patient who is not voiding normally (over 1,000 cc. per day).

"Should circumstances require sulfonamide administration in the presence of inadequate urinary output, the urine should be watched for evidence of renal damage and the dosage of drug adjusted so that a blood concentration, as evidenced by daily determinations, not to exceed 10 mg. per hundred cubic centimeters, is maintained. If further diminution of the urinary output occurs, administration of the drug should be stopped immediately and fluids should be forced orally, if possible, and by means of dextrose and water (5 per cent in sterile distilled water), intravenously if necessary. If anuria due to bilateral obstruction of the ureters develops, ureteral catheterization and lavage of the renal pelves may be required."

The emergency care of burns is outlined in this pamphlet as follows:

"Whenever casualties with extensive burns can be admitted to hospitals without delay and definitive treatment can be instituted promptly, morphine sulfate ½ grain should be administered at the scene of the incident and no local therapy applied to the burned area except sterile gauze to exposed surfaces to prevent infection."

The most notable change in the pamphlet is the withdrawal of the recommendation of the use of ointments or jellies containing tannic acid in the first aid treatment of burns. The new advice given is that when definitive care cannot be carried out within two hours the patient should receive sufficient morphine to relieve pain (not less than ½ grain, except for patients with lung and bronchial damage, the very old or the very young); and the burned surfaces should be covered with sterile boric acid ointment or petrolatum over which one or two layers of gauze of fine mesh (44) is to be smoothly applied. Over this dressing thick sterile gauze or sterile cotton waste is to be placed and the entire dressing is to be bandaged firmly but not tightly. Substitution of jelly containing 5 per cent sulfathiazole in water soluble base, which is supplied in the Office of Civilian Defense carrying case A for mobile medical teams, is permissible.

The discussion of definitive treatment of burns has been expanded to stress the necessity for administration of large amounts of plasma.

"For patients with severe burns, quantities up to 12 units or more may be required in the first twenty-four hours. To the patient in critical condition, plasma must be given rapidly (as much as 500 cc. in ten minutes may be necessary) and not allowed to flow drop by drop. It must never be administered by any other than the intravenous route. Syringe injection may be used. If facilities for hematocrit determinations are available, the following general rule can be used for guidance regarding the amount of plasma required. For each point that the hematocrit is above 50 per cent cells, at least 100 cc. of plasma should be administered. If clinically satisfactory results are not obtained with this dosage, larger quantities should be given." A footnote points out that rapid administration of intravenous fluids may be dangerous to cardiac patients and that the physician's judgment will have to determine the amount as well as the rate of administration in such cases.

The pamphlet describes "open" and "closed" treatment for burns. The "open" treatment, which is now considered the treatment of choice and is especially recommended for treatment of burns of the hands, face, feet, perineum and genitalia, consists essentially of the application of boric acid ointment or petrolatum, with pressure dressings. Such dressings can often be left in place twelve or fourteen days.

The "closed" treatment, which is the tanning or eschar method, is particularly indicated in extensive "flash" or second degree burns of the trunk. This method is recommended only if the following conditions are present: (1) If not more than twenty-four hours have elapsed, (2) if the burned area has not been grossly contaminated, (3) if strict surgical asepsis is employed in the preparation of the burned surface and (4) if coagulation is rapidly accomplished, i. e., by combined use of tannic acid and silver nitrate. The method of tanning is described as in the original edition of the pamphlet.

In the new directions, additional emphasis is placed on masking of both the patient and his attendants in order to minimize the danger of secondary infection.

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

Medical Schools Cooperate in Graduate Education

Under the auspices of the Wartime Graduate Medical Meetings arrangements have been made with fifty-five medical schools, through the Council on Medical Education and Hospitals, to participate in the teaching programs. The faculty members have already been designated from the University of Chicago, the University of Louisville, Emory University School of Medicine, Yale University and New York University.

The section committees of the Wartime Graduate Medical Meetings are engaged in conferences with commanding officers of service hospitals in their areas, selecting subjects, dates and teaching personnel for graduate courses. A recent directive was issued from the Office of the Surgeon General of the Army calling attention of commanding officers to this educational project and urging their cooperation and active participation.

PROCESSING PHYSICIANS IN THE FIELD

New instructions have been issued by the Officer Procurement Service and the Procurement and Assignment Service concerning the recruitment of physicians.

All available physicians are mailed invitations to seek commissions by the Procurement and Assignment Service. The invitation should be marked by the physician, indicating his choice of service, returned to the state chairmen, Procurement and Assignment Service, and forwarded to the appropriate agency. All requests for army appointments, including the Army Air Force, will be turned over to the Officer Procurement Service for processing and completion of the application.

The director of Naval Officer Procurement Service will handle requests for appointment in the Navy. Recent memoranda to the Officer Procurement Service stress urgent need for additional medical officers for the Army and describe technics to be employed.

SALE OF PENICILLIN RESTRICTED

The War Production Board has issued allocation order No. M-338 which states that on and after July 16 no supplier shall use or deliver penicillin except as specifically authorized in writing by the War Production Board. The word "supplier" in this order means any person who produces penicillin, imports penicillin or purchases penicillin for resale as penicillin but shall not include any retail pharmacist, hospital or physician.

The order points out that the fulfilment of requirements for the defense of the United States has created a shortage in the supply of penicillin for defense, for private account and for export.

MATERNITY CARE FOR WIVES OF ENLISTED MEN

More than three fourths of the states have received approval by the Children's Bureau, Department of Labor, of programs for medical and hospital maternity care for wives of men in the four lowest pay grades of the armed services, Secretary of Labor Perkins reported on July 2. Following approvals by the Bureau, funds for the specified services have been made available to thirty-seven states, the District of Columbia and Hawaii.

Plans for New York, California and Iowa also have cleared the Bureau. Secretary Perkins said "When the funds for the year beginning July are forthcoming, New York, California and Iowa will be in a position to authorize maternity and infant care for the wives and babies of enlisted men in the fourth, fifth, sixth and seventh pay grades. Plans from the health departments of Alaska, Ohio and Virginia are before the Children's Bureau for consideration and with their clearance there will remain only nine states which have not made application for federal funds or submitted plans for their services. These are Colorado, Georgia, Louisiana, Massachusetts, North Dakota, Oregon, Pennsylvania, Tennessee and Texas."

When a state plan has been approved and federal funds have been made available to the state health department, a serviceman's wife living in that state may make application for complete medical care during pregnancy and childbirth and for six weeks after childbirth. She may also apply for medical care for her child to extend throughout the child's first year of life. To get such care, all that the wife needs to do is to fill out simple forms, which, if her own doctor is unable to furnish copies, she can get from the state health department.

PRISONERS OF WAR

The Prisoners of War Information Bureau, under the Provost Marshal General in Washington, D. C., is the government agency which keeps records of American prisoners of war and civilian internees and maintains contact with their next of kin. However, the National Red Cross Societies and other humanitarian organizations accepted by the belligerents under the Geneva convention provide the machinery for giving relief supplies and other aid to the prisoners and also serve as a means of contact between the prisoners and their relatives. It is the function of the protecting power (Switzerland in the case of the United States) to see that the Geneva convention is properly observed by the detaining powers. The carrying out of the provisions for sending parcels and relief to internment camps, and for exchanging information between prisoners of nations at war and their own countries, is a tremendous task. The chairman of the American Red Cross, Norman H. Davis, recently said that the parcels of relief for American prisoners of war in Europe are operating smoothly and that, despite difficulties which at times appear overwhelming, the Red Cross and governmental agencies have continued negotiations to open relief channels to our prisoners in the Far East.

The rights of prisoners of war and their obligations are covered by international treaties which have been negotiated during the last seventy years and which culminated in the Geneva convention in 1929, signed and ratified by forty-two nations.

A prisoner has the right to receive letters as well as to send them and to receive parcels of food, tobacco, clothing, comforts and books; also the right to a proper trial for any serious infringement of camp discipline.

In Switzerland more than five thousand persons are employed by the International Red Cross Committee, most of them volunteers, endeavoring to carry out the provisions for sending parcels and relief for internment camps and for exchange of information between prisoners of nations at war and their own countries. The committee has a card index of twelve million cards; if news seems to move slowly to the families of prisoners of war, one should consider the amount of detail involved and the difficulties of transportation and the fact that a great many persons are constantly trying to improve this service.

OFFICE OF PRICE ADMINISTRATION

AMENDMENTS TO RATION ORDERS: OSTEOPATHS, CONDENSED MILK, FATS, OILS AND HOSPITALS

The Office of Price Administration announced on July 2 that any medical practitioner authorized by the state in which he practices to prescribe all internal drugs is also authorized to certify that a person requires supplementary food rations for health reasons. Authority to make such certification was previously confined to doctors of medicine. OPA has now broadened the authority so that osteopaths in states which license osteopaths to prescribe all internal drugs may also prescribe supplementary food rations. Food rationing regulations provide that a person whose health requires more rationed food than his ration points permit him to buy may apply to his local board for necessary additional points. In some illnesses foods are prescribed in addition to drugs or medicines, or as a substitute for them. In some counties the work of ration boards in processing such applications has been much simplified through the voluntary help of the doctors themselves. By establishing panels to review all medical certifications and to advise the boards, responsibility for issuing extra rations for health reasons has been kept on a professional level.

The Office of Price Administration under date of June 1 placed evaporated and condensed milk on the list of rationed products. These types of milk are added to the group of rationed foods containing meats and fats, for which red ration stamps are needed, without any increase in the total number of points allowed for this group. One point is required for one 14½ ounce can or for two 6 ounce cans or for two 8 ounce cans. This means that the child may use 7 of his 16 points per week for his milk requirements in terms of evaporated milk, which allows slightly less than the equivalent of a quart of whole milk per day, and have 9 points remaining for his meat and fat requirements. An invalid or any other person whose health requires that he have more canned milk than he can obtain with the stamps in his War Ration Book II may apply at his local War Price and Rationing Board for additional points. The consumer must submit a written statement of a licensed physician showing why he must have more canned milk, the amount needed during the succeeding two months and why unrationed foods cannot be used instead. A supplemental allotment to acquire canned evaporated and condensed milk needed by a hospital to meet the dietary needs of its patients may be obtained on application to its local War Price and Rationing Board. It is understood that, if the present method of rationing does not make evaporated milk available in all areas for infants and children, some more effective method will be worked out.

The Office of Price Administration has issued an amendment to ration order number 16 (R. O. 16, amendment 25) which permits the use of rationed fats and oils for external therapeutic purposes. This includes the use of vegetable oils, such as cottonseed oil, for bathing newborn infants, for external application in skin diseases, for urethral injection or lubrication of urethral instruments, and for x-ray visualization. Such use of rationed fats and oils is defined as "industrial consumption" and persons using these products for such purposes are classified as "industrial consumers." An industrial consumer engaged in the care and treatment of the sick and needing rationed fats and oils for this purpose may apply to his district Office of Price Administration for a certificate with which to acquire them. The procedure to be followed, briefly, is as follows: The application should be made on form R-1605 to the district office. If the applicant is a hospital the district office will pass on the application by using the same method of computing allowances as the local boards use in computing allotments for industrial users; otherwise the application will be forwarded to the Washington office for action. If the applicant requires more than he would receive by the method of computation described, he should also submit form R-315 stating the reasons for such request. An "industrial consumer" to whom a certificate is issued for "industrial consumption" of rationed fats and oils may use it only to acquire the foods for which application was made and may use those foods only for the purpose for which the application was granted.

For several months the Office of Price Administration and medical authorities have been studying the hospital problem with a view to developing a uniform procedure covering the granting of supplemental allotments for hospitals. Solution of the problem is believed near. In the meantime a provision in the regulations (section 11.6 of general ration order 5) should enable hospitals to obtain the necessary supplemental allotments so that patients need not suffer from dietary deficiency. This provision gives local boards authority to grant such allotments to meet the dietary requirements of patients living in and receiving care in hospitals whether or not such patients are on special diets. In determining the amount of the supplemental allotment of processed foods and the commodities covered by ration order 16, the local board will take into consideration the availability of fresh fruits and vegetables, unrationed substitutions such as poultry and fresh fish, and the physical facilities of hospitals to process and store such foods.

PUBLIC HEALTH UNDER HITLER

According to *l'Effort* of March 24, chocolate in which fish liver with vitamin A is incorporated is now manufactured in Marseilles exclusively for the Secours national and distributed to children in tablets of 30 Gm. containing 250,000 international units each.

DNB of March 27 states that the fourth Swiss Medical Mission with its auxiliary staff has returned home. Like the previous missions, it has served for three months in military hospitals in the East and done valuable service in treating and caring for our wounded. This medical mission too has gained valuable experience and conveyed new knowledge and ideas to Swiss medical science and research.

The Berlin correspondent of *Svenska Dagbladet* of March 3 reports that the German birth rate statistics for 1942 show a sharp decline in the birth rate and a smaller decline in the death rate. The surplus of births declined by 53.6 per cent.

In Germany, excluding the former Polish territory of Eupen and Malmedy, 1,238,845 children were born against 1,528,330 in 1941; that is, 15.2 and 18.8 per thousand respectively.

The number of deaths, excluding the armed forces, declined from 995,573 to 990,346; that is, from 12.3 to 12.1 per thousand. The surplus of births in 1942, apart from military losses, was 248,499 persons against 532,757 in 1941. During 1942, 607,021 marriages were concluded against 589,614 in 1941. In December the birth rate was slightly better than during the previous month, namely 14.3 per thousand against 13.2 in November, but the December death rate was slightly higher and even higher than in December 1941.

In the protectorate the birth rate increased throughout last year, the total figure for 1942 being 18.3 per thousand against 16.7 in 1941. The death rate also increased, being as much as 15.3 per thousand last December against 13.9 per thousand for the year 1942, an extremely high figure, considering the hygienic standard of the protectorate.

The *Donauzeitung*, Rumania, of February 3 reports that the Bucharest registrar's office recorded a total of 11,089 births, 12,215 deaths and 10,432 marriages in 1942. The birth rate has risen by about 5 per cent and the death rate by about 8 per cent as compared with the previous year, whereas there was a slight drop in the number of marriages as against 1940.

OFFICE OF WAR INFORMATION

MEDICAL NEWS LETTERS

The following item prepared by the Office of War Information has been approved for release by the Department of State:

The Office of War Information, in cooperation with the American Medical Association, has since July 1942 been preparing biweekly Medical News Letters for transmission to medical men and scientists abroad, where they are received with enthusiasm. Before the war, United States journals had wide circulation outside the country, and the lack of such material in foreign countries today is somewhat alleviated by these condensations from the journals, since shipping conditions do not permit transportation of heavy periodicals.

The Medical News Letters constitute straight scientific information service to physicians cut off from their quota of current news of medical progress, and the humane service they render redounds to America's advantage. For eager doctors, who are thus kept abreast of new developments and who would otherwise be left in the dark, are grateful to the United States for enlightenment.

The material, about 2,500 words of digests of current advances, is prepared by the abstracting staff of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and edited and printed by the Features Division of the Overseas Branch of the Office of War Information. It then goes to the State Department, which distributes it to the OWI outposts and diplomatic missions overseas.

The News Letters are sent by air to more than sixty areas, from Iceland to South Africa, including such remote points as Noumea and Madagascar. OWI regional outposts, when they receive the material, reproduce it in large quantities. In Ireland alone, for instance, 3,000 copies of the Medical Letters are circulated to Irish doctors and institutions, and in Sweden about 6,000 Science News Letters are now being distributed.

In English speaking countries they are printed as they stand in the medical journals of the area. In non-English speaking countries they are translated on the spot and reproduced in Swedish, French, Arabic, Chinese, Hindustani or numerous other foreign journals. If no journals exist, the letters are mimeographed and mailed to all the doctors and interested parties in the region.

That the Medical News Letters are welcome becomes increasingly clear as the file of dispatches conveying the appreciation and thanks of foreign scientists for the American effort to keep them abreast of current developments grows. These men express their gratitude not only for the Medical Letters but also for the other scientific information that the OWI is distributing. Science News Letters in the fields of astronomy, agriculture, genetics, biology, physics, geology, psychology and engineering are prepared, with the help of experts in each field, and delivered to many countries each month. This list is still growing. Ophthalmology, animal husbandry and veterinary medicine will be covered shortly.

Many illustrations could be given of the enthusiasm with which the News Letters are received. The following few will suffice to show the value of the project. A quotation from a letter written by a Swedish physician reads: "Please excuse my bad English. You can be sure that I am glad to have your Medical News Letter. When I saw it at first I had a glimpse of a sunray coming into this black night of isolation and almost hopeless fear that for so many years—yes, it seems like so many dark years—have been so heavy on our depressed minds."

A well known professor from the University of Finland, after expressing his gratitude, pointed out that the "sending of scientific information such as that embodied in the News Letters is a shrewd and effective way of reminding intelligent Finns that the United States is a more enlightened and civilized country than Dr. Goebbels would have people believe." Another Swedish dispatch said that "the Swedish medical men have long been accustomed to receive American medical journals and they have expressed great disappointment over their failure to arrive. The Medical News Letter fills a definite need, both psychologically, in making the Swedish medical men feel they still have contact with the democratic countries, and materially, in giving them information regarding the progress of medicine in the United States."

An interesting letter from a Moslem doctor in Syria who was furnished with a Medical News Letter reads in part: "The best way to love God is to love His creatures, and it is equally true that love of God is to relieve the ills of mankind. The credit of maintaining this service goes to American scientists, who during these difficult times are extending such a medical service, especially to this little known country."

Two Italian physicians in Eritrea took the trouble to write "We very much appreciate the effort made to put us doctors in contact with medical progress after so long an interruption." The vice chancellor of Queen's University in Belfast described the Science News Letter as most interesting and said "It is a very great pleasure to receive these papers, which I am circulating to our scientific departments, and they will be very much appreciated. Under present conditions it is far from easy for scientific workers in the United Kingdom to keep fully informed about the progress which their colleagues in the United States are achieving, and these papers will be read with the greatest interest. Perhaps you will kindly convey the sincere thanks of this university for the help which the Americans are so kindly rendering."

From distant Lourenço Marques in Portuguese East Africa, a communication arrived which reads "Physicians and military men here are most anxious to keep abreast of developments in the United States, and many of the medical men have requested me to express their appreciation to the Office of War Information and the American Medical Association for the News Letters, which are being widely distributed throughout this area and receiving such favorable comment." And in Great Britain, which, despite the war, is keeping up progress in medicine and research, this item appeared in the *Medical Press and Circular* of March 24. It was headed "Medical Letters" and ran as follows: "Most of us are familiar with our own *Bulletin of War Medicine*, a publication which has proved of extreme value in the dissemination of the latest information on problems arising out of the war. The Office of War Information of the United States government is now providing a series of Medical Letters which are published fortnightly and issued in this country from the American Embassy in London. These letters, if informally, are most attractively presented. They consist of a series of condensed reports on various advances in the field of medicine, prepared by the American Medical Association; they are not specifically confined to war medicine, although this subject receives its full share of attention. One of the most interesting features comes under the heading "What U. S. Doctors Are Talking About." Altogether, these Letters, which so far as we know represent a very novel departure on the part of any government, are of the greatest interest and value, and we would like to congratulate those responsible for their production most heartily. Incidentally, we trust that they will be continued after the war. It seems a pity that such an excellent idea should be restricted merely to these abnormal times, urgent though the needs of the moment may be."

It could not be made more dramatically clear that scientists the world over still look to America for light and progress.

ORGANIZATION SECTION

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Bills Introduced.—H. R. 3087, introduced by Representative McGehee, Mississippi, proposes to amend the privileged communication statute of the District of Columbia so as to make it inapplicable to information obtained by a physician in professionally attending a patient, in cases wherein the physical or mental condition of the patient is in issue. H. R. 3150, introduced by Representative Randolph, West Virginia, proposes to amend the healing arts practice act of the District of Columbia to eliminate the requirement that an applicant, applying for a license without examination, must have practiced the healing art under a license obtained in another jurisdiction for not less than two consecutive years immediately preceding the date of his application for his license in the District. As a substitute for this requirement, the bill would provide that the applicant must have practiced the healing art after the issuance of the license obtained in another jurisdiction for not less than one continuous year out of three years immediately preceding the date of his application for license in the District. This bill would provide too that the required one continuous year's practice may be either private, institutional or governmental, or a combination thereof.

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 997 has passed the House and Senate, establishing a Pharmacy Corps in the Medical Department of the Army. As originally introduced, this bill proposed to eliminate the Medical Administrative Corps and to substitute therefor a Pharmacy Corps. As enacted, this legislation leaves intact the Medical Administrative Corps. H. R. 2936 has passed the House and Senate, authorizing an additional $200,000,000 for expenditure under the Lanham Act for the construction of community facilities. S. 1250 has passed the Senate, repealing existing law under which the pay of persons in the military and naval service who are absent from duty on account of the direct effects of venereal disease due to misconduct is forfeited.

Bills Introduced.—S. 1277, introduced by Senator Thomas, Utah, proposes that the benefits of the United States Employees' Compensation Act be extended to all civilian officers of the United States, commissioned officers of the Coast and Geodetic Survey, commissioned officers of the regular corps of the United States Public Health Service and officers in the Reserve of the United States Public Health Service on active duty. S. 1295, introduced by Senator Pepper, Florida, provides for the making of loans to war service persons, on honorable discharge or honorable release from service, to enable them to complete their education. Any war service person, the bill provides, while receiving educational training, or the husband, wife, child or children of such person shall be eligible to receive any necessary medical attention or care at any hospital or medical institution wholly supported by the United States Government when facilities exist in such hospital or medical institution for furnishing such medical service or care. S. 1320, introduced by Senator La Follette, Wisconsin, proposes that the Surgeon General of the Public Health Service shall provide, on the request of state or local health authorities, for the hospitalization, treatment and subsistence in hospital facilities operated by the Public Health Service of persons registered under the Selective Training and Service Act who are found to be infected with venereal disease. Senator La Follette first offered this legislation as an amendment to H. R. 2935, the Labor-Federal Security Appropriation Act, but the amendment was ruled out of order. S. 1329, introduced (by request) by Senator George, Georgia, and H. R. 3176, introduced by Representative Rankin, Mississippi, propose to regulate the furnishing of artificial limbs or other appliances to retired officers and enlisted men of the Army, Navy and Marine Corps or Coast Guard and to certain civilian employees of the military and naval forces of the Regular Establishment. H. R. 3086, introduced by Representative Forand, Rhode Island, proposes to provide identification buttons for persons discharged from military or naval service due to physical defects not due to personal misconduct. H. R. 2939, introduced by Representative McMillan, South Carolina, proposes to provide a uniform allowance for members of the Army Nurse Corps. H. R. 3178, introduced by Representative Celler, New York, proposes to provide for the wartime care and protection of children of employed mothers.

STATE MEDICAL LEGISLATION

Alabama

Bill Introduced.—S. 328 proposes the creation of a board of medical technicians examiners and defines a medical technician as a person who, as a result of certain technical training (in a training school approved by the Council on Medical Education and Hospitals of the American Medical Association) or certain apprenticeship-instruction, is engaged in the practice of standardized or experimental technical procedures covering any of the various departments of laboratory methods (urinalysis, hematology, bacteriology, parasitology, histopathologic technic, biochemistry and serology), the results of which are interpreted by a physician in the diagnosis of disease.

Bill Enacted.—S. 213 has become Governor's No. 164 of the Laws of 1943. It authorizes the governing bodies of every state department, county, municipality, board, commission or subdivision of the state of Alabama to adopt and carry into effect a system of group life insurance and group hospitalization insurance, or either, for the benefit of its employees.

Connecticut

Bills Enacted.—S. 253 has become chapter 332 of the Laws of 1943. It authorizes the state board of examiners for nursing to issue temporary licenses to certain properly qualified persons. H. 312 has become chapter 366 of the Laws of 1943. It provides for an appropriation of $50,000 for furnishing medical, hospital, nursing, obstetric and pediatric care to wives and children of service men when they are unable to purchase such care for themselves. H. 1026 has become chapter 325 of the Laws of 1943. It authorizes a court, in certain circumstances, to order the examination of an accused person to determine whether or not such person is suffering from a venereal disease and, if the result of the test is positive, to make such order as may be necessary for the detention and treatment of such person. The examination shall be conducted at the expense of the state. H. 1312 has become chapter 311 of the Laws of 1943. It amends the law relating to the practice of chiropractic by eliminating therefrom the existing requirement that chiropractors show satisfactory evidence, at the time of the annual renewal of their licenses, that they have attended at least one of the two day educational programs conducted by the Connecticut Chiropractic Association, Inc., the subjects of such programs being under the supervision of the state board of chiropractic examiners.

Ohio

Bill Enacted.—S. 36 was approved, June 3. It is an administrative procedure bill providing for uniformity of procedure in hearings and actions taken by administrative boards, such as the medical board.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Dr. Swartout Appointed Health Officer of Los Angeles County.—On June 17 Dr. Hubert O. Swartout was appointed health officer of Los Angeles County. Dr. Swartout has been acting health officer since the appointment of Dr. Wilton L. Halverson as state health officer (THE JOURNAL, February 13, p. 530).

Herbert Evans Honored.—Dr. Herbert M. Evans, Morris Hertzstein professor of biology and director of the Institute of Experimental Biology, University of California Medical School, San Francisco, was guest at a dinner on June 4 given by members of the medical and other faculties of the university to mark his sixtieth birthday, which will be observed in September. The celebration was held at the Bohemian Club, San Francisco, under the chairmanship of Dr. William J. Kerr, San Francisco, professor of medicine at the medical school. Dr. Evans was presented with an anniversary volume published by the University of California Press entitled "Essays in Biology," containing forty-eight scientific contributions from pupils, associates and friends representing the physiology of reproduction, endocrinology, nutrition and the history of medicine and science. *Science* reports that the publication was planned before the war, and the participants are leading foreign and American workers in their respective fields.

DELAWARE

Rocky Mountain Spotted Fever.—On June 24 the Delaware Board of Health, Wilmington, reported 2 cases of Rocky Mountain spotted fever in Cedar Creek and Little Creek townships. According to the New York *Times*, June 25, this brings to 4 the number of cases reported in the state during the previous two weeks. No cases were reported last year.

DISTRICT OF COLUMBIA

District Medical Election.—Dr. James N. Greear Jr. was chosen president-elect of the Medical Society of the District of Columbia at its annual business meeting on May 5 and Dr. Fred R. Sanderson was installed as president. Mr. Theodore Wiprud is the secretary-treasurer. The annual scientific assembly will be held at the Mayflower Hotel, Sept. 30 to Oct. 2, 1943.

Fund for Psychiatric Aid to Children.—The Loren B. T. Johnson Memorial Fund has been established by Mrs. David S. Barry Jr. in honor of her father. The $25,000 trust fund will be used for "the intensive and specialized care and treatment of children in connection with the special objectives of the Washington Institute of Mental Hygiene." Dr. Johnson, who died in December 1941, helped organize the Washington Child Guidance Clinic and the Life Adjustment Center, which were later merged to form the Washington Institute of Mental Hygiene, now supported by community chest funds. Dr. Winfred Overholser succeeded the late Dr. Johnson as president of the mental hygiene institute.

ILLINOIS

Bicounty Defense Zone Health Department.—The Fulton and McDonough counties have joined to establish the first locally directed bicounty defense zone health department in the state. The unit is under the full time supervision of Dr. Edward L. Hill Jr. with headquarters at Macomb.

Chicago

Course on Wartime Nutrition.—A postgraduate assembly on wartime nutrition will be sponsored by the Institute of Medicine of Chicago at the Palmer House, November 17-18. Details of the course, for which there will be no registration fee, will be announced later.

Dr. Stewart Thomson Named Assistant Dean.—Dr. Stewart C. Thomson, assistant professor of anatomy, Loyola University School of Medicine, has been appointed assistant dean of the school, succeeding Dr. John G. Powers, who plans to enter private practice. Dr. Francis J. Braceland, dean of the medical school, is now in the Navy. Dr. Thomson has been a member of the faculty of Loyola since he graduated there in 1936.

The Capps Prize.—Announcement is made of the Joseph A. Capps Prize offered annually by the Institute of Medicine of Chicago for the most meritorious investigation in medicine or in the specialties of medicine. The investigation may be also in the fundamental sciences, provided the work has a definite bearing on some medical problem. Competition is open to graduates of Chicago medical schools who completed their internship or one year of laboratory work in 1941 or thereafter. Manuscripts must be submitted to the Institute of Medicine of Chicago, 86 East Randolph Street, not later than December 31.

INDIANA

Mental Patients' Orchestra.—So successful has been an experiment with an orchestra composed of inmates at the Indiana Hospitals for Insane that an additional program for the development of singing and dancing has now been undertaken, according to the state medical journal. The orchestra has grown from a group of 12 to 29. None of the inmates who agreed to try to learn to play musical instruments had had any previous experience. A campaign was conducted by the Michigan City *News Dispatch* to obtain instruments. The first appearance was before members of the board of trustees. Patients who previously had refused to study music became eager to do so. The 29 inmate-musicians at the time of this report had a repertoire of twenty-five pieces.

MICHIGAN

Changes in Health Officers.—Dr. Leonard C. Bate, Stambaugh, director of the Iron County Health Department, was placed in charge of the unit in Ontonagon County, effective June 1. The central office of the two counties will be maintained in Stambaugh with a branch in Ontonagon.——Dr. Clifford C. Corkill resigned as head of the Menominee County Health Department, effective July 1, to enter private practice. ——Dr. Madelene M. Donnelly has been named director of health district number 7 comprising Clare, Gladwin and Arenac counties, following the vacancy that occurred with the transfer of Dr. Helen E. P. Lanting, Gladwin, to a similar position in the Shiawassee County health district.

Annual Report of Children's Fund.—More than $734,000 was expended by the Children's Fund of Michigan through various agencies, including donations of $96,000 to seven war agencies, according to its fourteenth annual report recently made public and covering the year ended April 30. Of the original fund of $10,000,000, which was later increased by more than $2,000,000 by Senator James Couzens, more than $7,500,000 remains. Both capital and earnings of the fund are to be applied in the field of child health and guidance over a twenty-five year period at the annual rate of about $700,000. The largest contributions for the fiscal year, the report showed, were in the field of child health, with expenditures totaling $337,039. In the field of health education $10,650 was appropriated. The year concluded the second in which the Children's Fund subsidized the state department of public instruction to help it incorporate within itself a system of health education. Prior to the arrangement with the state department, the Children's Fund had for a number of years been financing a health education demonstration. The total expenditure for dentistry was $144,757. Four counties, Grand Traverse, Leelanau, St. Clair and rural Wayne, have completed health organization, one of the objectives of the fund, while Iron, Menominee, Mecosta and Osceola counties will soon complete their own programs, making a total of ten locations previously subsidized by the fund from which it will retire. Other donations to independent health agencies include the second payment of $20,000 on an $80,000 appropriation to the House of Good Shepherd in Detroit for a new hospital building. Under grants to war agencies, the report lists a $50,000 donation to the War Chest of Detroit and a payment of $32,500 on a $65,000 pledge to the American Red Cross. A fund of $10,000 was also set up late in the year to assist in the establishment of nursery schools to care for children of working mothers. Seven child guidance institutions received grants totaling $110,607, including $90,857 to the Children's Center, Detroit, which was created by the fund. An $11,000 grant made annually for child guidance on a statewide basis will be discontinued, with the state taking over the appropriation next year. Thirteen recreational organizations received grants of $38,050, and the Michigan Children's Aid Society, which cares for dependent children, received $29,150. Research programs, including projects at both Wayne University, Detroit, and the University of Michigan, Ann Arbor, received $68,416. General administration costs came to $43,342.

NEBRASKA

The Eleventh Annual Assembly.—The Omaha Mid-West Clinical Society will hold its eleventh annual assembly, October 25-29. Among the guest speakers and their subjects will be Drs. Eben J. Carey, Milwaukee, basic sciences; Sanford R. Gifford, Chicago, eye, ear, nose and throat; Cyrus E. Burford, St. Louis, genito-urinary; Jennings C. Litzenberg, Minneapolis, gynecology and obstetrics; James E. Paullin, Atlanta, Ga., and Tom D. Spies, Birmingham, Ala., and Cincinnati, medicine; Harold G. Wolff, New York, neurology; Frank R. Ober, Boston, orthopedic surgery; Luther Emmett Holt Jr., Baltimore, pediatrics, and Raymond W. McNealy, Chicago, and Robert Lee Sanders, Memphis, Tenn., surgery. A symposium on military medicine and surgery will be a feature of the meeting on Friday, October 29.

NEVADA

State Board of Medical Examiners. — Dr. Robert P. Roantree, Elko, was reelected president of the Nevada State Board of Medical Examiners at a meeting on May 5 and Dr. George H. Ross, Virginia City, was chosen secretary-treasurer. Dr. Ross was named to succeed Dr. Richard A. Petty, Carson City, who resigned to enter the Navy.

NEW HAMPSHIRE

Broadcasts on Industrial Hygiene. — The division of industrial hygiene of the New Hampshire State Board of Health is presenting a series of broadcasts on industrial health problems.

Dr. Frechette Granted Leave for Rehabilitation Work. —Dr. Alfred L. Frechette has been granted a leave of absence as secretary of the New Hampshire State Board of Health, Concord, to engage in war rehabilitation work under the auspices of the U. S. Public Health Service. He left for his new activities on May 20. He has been with the state board since 1938, first as director of the division of venereal disease control and later as deputy secretary. In 1942 he was named secretary and executive officer of the board.

NEW YORK

Outbreak of Septic Sore Throat.—*Health News* recently reported an outbreak of septic sore throat and scarlet fever involving over 50 students and faculty members of an upstate school. Tapioca pudding which had been allowed to stand overnight without refrigeration was served at a school lunch. It had been prepared by a woman cook who, after the outbreak, stated that she had "felt poorly" during the previous day or two and who on the day of the luncheon had gone home with a sore throat. The symptoms included fever, inflamed throat and swollen glands, and in a few cases there was a scarlet fever rash. Every one of the 55 patients had eaten the school luncheon regularly, while no illness was found among 14 pupils who had the noonday meal at home.

New York City

Dr. Oswald Avery Retires at Rockefeller Institute.— Dr. Oswald T. Avery, a member of the staff of the Rockefeller Institute since 1913, has been made member emeritus of the institute; he has reached the retirement age. A graduate of Columbia University College of Physicians and Surgeons, 1904, Dr. Avery was associate director of the department of bacteriology at the Hoagland Laboratory of the Long Island College Hospital, Brooklyn, from 1907 to 1913. His work in bacteriology and immunology of respiratory diseases had won for him the J. Mather Smith Prize, the John Phillips Memorial Medal and the Paul Ehrlich Gold Medal. In 1930 he was president of the Association of Immunologists and in 1933 of the American Association of Pathologists and Bacteriologists.

Annual Graduate Fortnight.—"Disorders of the Digestive Tract" will be the theme of the sixteenth Graduate Fortnight of the New York Academy of Medicine, October 11-22. Following an address of welcome by Dr. Arthur F. Chace, president of the academy of medicine, Dr. Andrew C. Ivy, Bethesda, Md., will deliver the Ludwig Kast Lecture on "The Physiology of the Gastrointestinal Tract." On Friday the Wesley M. Carpenter Lecture will be delivered by Dr. Robert Elman, St. Louis, on "Parenteral Fluids and Food in Gastrointestinal Diseases." Other speakers on the program will include:

Dr. Harold G. Wolff, Emotions and Gastric Function.
Dr. Edward B. Benedict, Boston, A Critical Review of Gastroscopy.
Dr. Arthur W. Allen, Boston, Diagnosis and Treatment of Benign and Malignant Lesions of the Stomach.
Dr. Harry Shay, Philadelphia, The Pathologic Physiology of Gastric and Duodenal Ulcer.
Dr. Asher Winkelstein, Recent Advances in the Therapy of Peptic Ulcer.
Dr. Rustin McIntosh, Disorders of the Gastrointestinal Tract in Children.
Dr. William E. Ladd, Boston, Surgical Aspects of Congenital Anomalies of the Gastrointestinal Tract in Children.
Dr. Ralph Colp, Postcholecystectomy Syndrome and Its Treatment.
Dr. Allen O. Whipple, Recent Advances in the Surgery of the Pancreas.
Dr. Jacob A. Bargen, Rochester, Minn., Present Status of Regional Enteritis and Ulcerative Colitis.
Dr. Warfield M. Firor, Baltimore, The Sulfonamides in Gastrointestinal Diseases.
Lieut. Col. Thomas T. Mackie, M. C., A. U. S., Amebiasis and the Flagellate Diarrheas.
René J. Dubos, Ph.D., Boston, Problems of Immunity to Bacillary Dysentery.
Dr. William Osler Abbott, Wynnewood, Pa., The Management of Acute Intestinal Obstruction.
Dr. William L. Watson, Treatment of Diseases of the Esophagus.
Dr. Henry W. Cave, The Surgical Management of Certain Diseases of the Colon.
Dr. Harvey B. Stone, Baltimore, Diseases of the Anus and Rectum.
Dr. Frederick J. Stare, Boston, Nutrition in Medicine.

Morning panel discussions will be held Tuesday, October 12, on "Emotions and Gastric Function" with Dr. Wolff as chairman; Friday, October 15, "Diagnosis of Gastrointestinal Lesions by Means of X-Ray and Gastroscopy," Dr. Ross Golden, New York; Tuesday, October 19, "Use of Sulfonamides in Gastrointestinal Diseases," Dr. Walter A. Bastedo; Friday, October 22, "The Commoner Diseases of the Anus and Rectum of Interest in General Practice," Dr. Stone. There will be exhibits demonstrating the recent advances in the etiology, pathology, diagnosis, prophylaxis and treatment of disorders of the digestive tract and special demonstrations of fresh pathologic material. There will be a special exhibition of books on the subject. Afternoon clinics have been planned at various hospitals in the city.

NORTH CAROLINA

School of Physical Therapy Established.—The medical school and the Woman's Coordinate College of Duke University, Durham, will open a school of physical therapy, September 27, with Dr. Lenox D. Baker, head of the Duke orthopedic service, as medical director. Miss Helen Kaiser, Cleveland, formerly president of the American Physiotherapy Association, will be the technical director. The school will be conducted at Duke Hospital and will give a nine months course of study and training. Candidates must satisfy one of the following requirements: two years or sixty semester hours of college, including courses in physics and biology, graduation from an accredited school of physical education or graduation from an accredited school of nursing. Owing to the war demands for nurses at this time, candidates from the latter group are not especially desired. A number of scholarships are given for the benefit of women interested in this field of work. Miss Kaiser graduated in the course of physical therapy of Harvard Medical School, Boston, and served there as assistant instructor. She served three years as chief physical therapist of the Detroit Orthopaedic Clinic. She reorganized and established the physical therapy departments of the Woman's Hospital and the Mount Sinai Hospital, Cleveland.

TEXAS

University News.—Leslie L. Lumsden, New Orleans, epidemiologist, medical director, U. S. Public Health Service, retired, has been made lecturer in epidemiology at the University of Texas Medical Branch, Galveston. The regents of the University of Texas have accepted legislative authorization to incorporate the Texas Dental College, Houston, into the University of Texas health program. Fred C. Elliott, D.D.S., has been appointed by the regents to continue in charge of the institution, which will be known as the University of Texas School of Dentistry. Dr. Eric Ogden, associate professor of physiology at the University of California Medical School, San Francisco, was a recent guest at the University of Texas Medical Branch, Galveston, where he spoke on "Renal Factors in Hypertension."

WASHINGTON

New State Health Director. — Dr. Leland E. Powers, health officer of Tacoma, has been appointed director of the Washington State Department of Health. He succeeds Dr. Donald G. Evans, Seattle, who, according to *Northwest Medicine*, will enter private practice.

Personal.—Dr. Robert H. Welding, Ellensburg, has been named health officer of Kittitas County.——Dr. John W. Unis, Seattle, has been appointed medical supervisor for the department of social security. He succeeds Dr. John M. Flude, Olympia, who resigned to enter private practice in California.

WYOMING

State Medical Election.—Dr. Thomas J. Riach, Casper, was chosen president-elect of the Wyoming State Medical Society at the meeting of its house of delegates in Casper, June 6. Dr. Earl E. Whedon, Sheridan, was installed as president. Other officers are Drs. George H. Phelps, vice president; Frederick L. Beck, treasurer, and Marshall C. Keith, secretary, all of Cheyenne.

GENERAL

Public Meeting on Enrichment of White Flour.—A public meeting to consider the advisability of requiring all white flour distributed for human consumption to be enriched will be held on July 21 in the South Agriculture Building Auditorium, Washington, D. C. There is a federal standard for enriched flour which at present requires specific quantities of thiamine, niacin and iron. Beginning on October 1 the vitamin riboflavin will also be required. The need for a wide distribution of the vitamins and minerals contained in enriched flour was the basis for the provision of Food Distribution Order number 1 requiring enrichment of all bakery white pan bread. In order that all white bread, whether baked in the home, in an institution or in the commercial bakery, may contain these essential nutritive factors, it has been proposed to enrich all white flour distributed for human consumption. A proposed order has been drafted in accordance with recommendations received from the National Research Council. The effective date of the order, if issued, will be made not less than one hundred and twenty days after its date of publication, affording millers who have not enriched their flour an opportunity to obtain necessary equipment and materials. Likewise bakers who are enriching bread by other means will have an opportunity to consume their stocks of enrichment agents. Persons unable to attend the public meeting may address expressions of opinion to the Director of Food Distribution, War Food Administration, Washington, to be received not later than July 26.

Meeting of Board of Obstetrics and Gynecology.—At the annual meeting of the American Board of Obstetrics and Gynecology in Pittsburgh, May 20-25, 108 candidates were certified. A number of changes in board regulations and requirements were put into effect. Examples are the allowance of a stipulated amount of credit toward special training requirements for men in service and assigned to general surgical positions, special training allowances on a preceptorship basis for men assigned to obstetric or gynecologic duties in military hospitals and working under the supervision of certified specialists or recognized obstetrician-gynecologists, as well as credit toward the "time in practice" requirement of the board to be allowed for time in military service. The board will no longer require a general rotating internship but will now accept a one year intern service. Such services must be in institutions approved by the Council on Medical Education and Hospitals of the American Medical Association. The privilege of reopening applications by candidates who have been declared ineligible has been extended to two years from the date of filing the applications instead of one year. The board has ruled temporarily to excuse men in military service from the submission of case records at the stipulated examination times, thereby permitting them to proceed without further delay with the board examinations. This does not obligate the board, however, to waive the case record requirement for such candidates. Plans have been made to provide similarly for service men on their eventual discharge from the armed forces and to permit the greater use of operations done while in residency or in civilian practice before the war. Applications and bulletins of detailed information regarding the board requirements will be sent on request to the secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburgh.

Committee of Physicians for the Improvement of Medical Care, Inc., Issues Statement.—On July 6 the Committee of Physicians for the Improvement of Medical Care, Inc., which is apparently the continuing body of the so-called Committee of Four Hundred which was prominent around 1937, issued a statement which apparently is being circulated to those who signed its first communication. The committee now includes Drs. Channing Frothingham, chairman; Milton C. Winternitz and Carl A. L. Binger, vice chairmen; Russell L. F. Cecil, honorary chairman; John P. Peters, secretary and treasurer, and Bertram M. Bernheim, Ernst P. Boas, Samuel Bradbury, Allan M. Butler, Hugh Cabot, Louis Casamajor, Thomas B. Cooley, Charles A. Flood, Francis T. H'Doubler, William J. Kerr, H. Clifford Loos, George M. Mackenzie, Harry S. Mackler, Thomas Grier Miller, George R. Minot, Robert B. Osgood, Henry B. Richardson, G. Canby Robinson, David Seegal, Richard M. Smith, Borden S. Veeder and Mortimer Warren. In this statement the committee duplicates a letter in which it congratulates Senator Robert F. Wagner for presenting the Wagner-Murray-Dingell bill. The committee states that it will give the bill careful consideration and report results of its studies at an early date. On the subject of medical education the committee states that it is hesitant to criticize but feels nevertheless that several features of the program established by the armed forces are open to criticism. The committee feels that control of the educational system should not be left to the military authorities but that it is preferable to establish "at once a comprehensive authority to assume direction of medical education, with separate bodies responsible for the major scientific and technical branches." On the subject of medical manpower the committee accepts in toto the recent report from the Office of War Information and says "One centralized federal body should be given responsibility for the control of medical manpower." It argues that this should be the United States Public Health Service and that this service should provide not only doctors but also nurses and other personnel and all the facilities of modern medicine. It states that use should be made of Negro physicians and qualified refugee physicians in meeting shortages in various areas. In order to prevent competition with medical practice, it is proposed that the fees collected by these physicians from those able to pay should be turned over to a federal agency for expansion of local health service under the direction of the United States Public Health Service. The report states that this will require at most four thousand physicians. In discussing the National Physicians Committee for the Extension of Medical Service, the committee indicates that it is confused as to the nature of the conduct of the National Physicians Committee and attacks the National Physicians Committee for its point of view regarding the private practice of medicine.

LATIN AMERICA

New Medical Journals.—*Obstetricia y Ginecologia Latino-Americanas,* a bimonthly journal, made its first appearance with the February 28 issue. Dr. Manuel Luis Pérez is the editor. The headquarters are at Calle J. E. Uriburu 1575, Buenos Aires.——The first issue of *Boletin Médico Mexicano* appeared in January. Dr. L. B. Robinson is the director and J. P. Martinez the editor. The headquarters are at Calle de Bolivar Núm. 23, desp. 116, D. F., México.

Roving Doctors Care for Rubber Tappers.—Rubber tappers in remote malaria infested jungles of Central America are being cared for by a new type of roving doctor, the practicant. The practicant usually is a young medical student with sufficient practical knowledge to treat the rubber tappers for malaria, wounds and insect bites and similar ailments common to forest workers. One practicant working in the departments of Peten and Quiche saw 99 tappers and their families in a month's travel of 300 miles by boat and mule. In this group 26 men were found with malaria. Practicants are being assigned to this work in various parts of Central America where the Institute of Inter-American Affairs is cooperating with local authorities in the organization of health services for workers.

Health Projects Surmount Wartime Material Shortages.—Wartime shortages of steel, concrete and other construction materials have not halted the inter-American health and sanitation program in Central America. Scores of new health facilities are being pushed to completion, including health centers, clinics, hospitals, water supply and sewerage systems, surface drainage installations for malaria control and other health projects. To meet the problem of diminishing supplies, an announcement from the Institute of Inter-American Affairs states that the engineers have revived old technics of building used a hundred years ago, discovered substitutes for concrete from local materials and used Indian craft. In an inter-American project for malaria control at San Miguel, clay inverts are used to meet the shortage of cement. The inverts are made in the same fashion in which Indians produced pottery before the arrival of the white man.

CORRECTION

Wetting Agent Formula.—In the report of the Committee on Occupational Dermatoses on Recognition and Prevention of Industrial Dermatitis, which appeared in THE JOURNAL, June 5, formula 11 of a wetting agent should have read:

FORMULA 11

	Per Cent
Sulfonated olive oil	38.5
Light liquid petrolatum	31.5
Sulfonated neat's foot oil	20.0
Gelatin, 25 per cent aqueous solution	10.0

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 5, 1943.

Medical Results in the Tunisian Campaign

The treatment of the British wounded in the Tunisian campaign seems to have been the most successful recorded in war. This result can partly be explained by the innovation of transport by air. Toward the end of the previous great war one British hospital in France had 1,300 severely wounded, of whom 113 died. In Tunis a similar hospital had 1,500 severely wounded, of whom only 5 died. Full statistics are not yet available, but we are assured that when they are they will amaze the world. There has been no tetanus and little gas gangrene, and sepsis has been largely controlled by sulfonamides. These results have been achieved in spite of great transport difficulties. The wounded had to be moved hundreds of miles, sometimes by motor ambulance, sometimes by hospital train. Once we gained air superiority it was possible to send them by hospital ship. But the most valuable means of transport were troop carrier aircraft fitted to take 18 stretcher cases, as well as air crew, doctor and nurses. More than 15,000 wounded were evacuated by air, usually to Algiers or Oran, sometimes to Gibraltar, occasionally even to America or England. In April alone 7,000 were thus transported. Aircraft also carried medical supplies in the opposite direction. One flew plasma to the Eighth Army in Tripoli. The most remarkable achievement was to fly the whole of a small general hospital to American troops isolated in desert country. The job took eighty loads, but it was done in one day.

The lives of many wounded in Tunisia were saved by blood transfusion and many more by major operations performed closer to the firing line than ever before. Our new field surgical units, staffed by young surgeons, have done miracles under fire. The air borne surgical team proved worthy of the parachutists whom it served and with whom it dropped. One surgeon broke his leg above the knee in landing. He concealed the injury for three weeks during which he performed a number of major operations, giving himself a local anesthetic between operations. Another hid a severe wound for thirty-one hours.

The general health of the First Army was no less remarkable than its recovery from wounds. Probably no force on active service has ever been healthier. The much disliked inoculations produced complete absence of tetanus and almost complete absence of typhoid. There were hardly any typhus cases, though there was much typhus in the country and there was a severe epidemic during the previous winter. The malaria season began last month, but plans to control the disease were begun in January. All the troops now take antimalaria pills, which they dislike very much.

An Indian Army Medical Corps to Be Formed

A recent example of the endeavor of the British government to promote the advancement of the various peoples of the empire is in the medical sphere. The immediate formation of an Indian army medical corps, to be organized on lines similar to those of the medical corps of the British army, is announced. It will take the place of the existing Indian Medical Service, which is now rather more European than Indian. This action follows the visit to India of the Medical Personnel Mission, which was headed by Mr. H. S. Souttar, chairman of the council of the British Medical Association, and included the director general of the army medical service and a former director general of the Indian medical service. The mission was sent at the request of the government of India. The two sources of supply of doctors in India are the graduates (about 12,000) and the licentiates (about 35,000). The graduates have passed through a full medical curriculum and have acquired a qualification registrable in Britain. Many of them have attained distinction and are capable of specialized work of high order. For the licentiates we have no exact parallel here. They vary much in primary education and professional attainments. But their training has been much improved in recent years and many of them are skilled and compete successfully in civil practice with the graduates. The mission visited Cairo on their way to India and made special inquiries about the work of the licentiates in the war and found that their commanding officers considered them capable of full medical responsibility. They have already been employed in the Indian army but with lower rank and less pay than the graduates.

The mission proposed—and the proposal has been accepted by the government—that all candidates for a commission in the new medical corps, whether graduates or licentiates, shall undergo at least a three months preliminary course of training in subjects important for military service, such as anesthesia, blood transfusion, war wounds, nutrition, tropical diseases and hygiene. They will be under close observation during this period, and on the report given by the commandant will depend the bestowal of a commission. The most noteworthy reform is that every doctor qualified to practice in India will have the opportunity to rise in the corps to any position which his abilities justify.

The absence of an effective nursing service from the Indian army impressed the mission. There are only 300 registered male nurses in the whole of India. The bulk of the nursing is performed by sepoys who have received only a brief military training. The attempt will be made to attract to the army a superior class of men, who will be trained in nursing and first aid.

A tribute should be paid to the highly efficient Indian medical service, which is now to be superseded. It began as a purely British service, but with the progress of medical education in India it became more and more Indian. At the outbreak of the war it numbered 780, of whom 60 per cent were European and 40 per cent Indian. The number is now 2,838, of whom only 20 per cent are European. Thus the wartime increase has been almost entirely Indian. It was from the Indian medical service that the most important British advances in tropical medicine came. The most important example was the discovery of the malarial parasite by Ross.

Attacks on Hospital Ships

The recent torpedoing and sinking of the Australian hospital ship *Centaur* by the Japanese has recalled the frequency with which this outrage has been perpetrated by the Germans and Italians. In the House of Commons Sir William Davison, First Lord of the Admiralty, gave a list of twenty-six Axis attacks on hospital ships, beginning with the *Atlantis,* which was bombed four times off Norway from May 1 to May 11, 1940 but escaped damage. Many were severely damaged and three were sunk. All forms of attack—bombing, dive bombing, machine gunning, shelling and torpedoing—were suffered, with much loss of life to patients, medical staff and nurses. All the ships were properly marked in accordance with the Geneva Convention, but this did not save them. It is curious that the last attack on a British hospital ship, according to the official list, was on May 10, 1942, when the *Ramb IV* was bombed and sunk near Alexandria.

Norwegian ships have also suffered. From the Norwegian government information office in London H. K. Lemkuhl has written to the *Times* describing the sinking of Norwegian hospital ships. On April 24, 1940 the hospital ship *Brand IV* was bombed by German dive bombers outside Aandalsnes. One doctor, two nurses and three ambulance men were killed. This

ship was clearly marked with red crosses. The survivors were also machine gunned from the air after they had succeeded in landing on an island. On April 20, 1940 the hospital ship *Queen Maud*, also clearly marked with red crosses, was bombed at Gratangen, north of Narvik. There were 22 casualties. On June 9, 1940 the hospital ship *Ariadne*, white painted and clearly marked with red crosses, was bombed and sunk outside Tromso during the evacuation.

Wartime Changes at Oxford

The opening of term is marked by various professorial changes. Sir Farquhar Buzzard retires from the regius professorship of medicine and is succeeded by Prof. Arthur Ellis. Prof. J. A. Ryle becomes the first professor of a new chair—social medicine.

AUSTRALIA

(From Our Regular Correspondent)

April 13, 1943.

Opposition to a Salaried Medical Service

Unified opposition to change in the present system of medical practice was expressed at a recent convention in New South Wales, which adopted the motion that "a whole time salaried service for a nationwide medical service is not in the interests of the community." The convention, which consisted of representatives of medical organizations in the state of New South Wales called together by the council of the New South Wales branch of the British Medical Association, was held in Sydney on February 4 and 5. In his inaugural address Sir Charles Blackburn said that there was a certain amount of resentment that the discussion would center to a large extent around a scheme submitted by the National Health and Medical Research Council, and there was a strong feeling that the government had slighted the medical profession by not coming direct to it for its advice on a matter about which it was most competent to speak.

The convention was of the opinion that the optimum efficiency of medical service to the people of Australia could be provided under the existing structure of consultant, general practitioner and hospital services together with the adoption of certain measures which included the extension of group practice initiated by members of the profession themselves. The principle of free choice of doctor and patient and the maintenance of the personal relationship between them was upheld. A motion was carried to the effect that complete disciplinary control of members accepting service in any scheme which might be initiated should be exercised only by members of the British Medical Association. The convention was opposed to any change being made in the status of the medical profession and conditions of medical practice during the currency of the war and for a period of one year after its termination and resolved that the federal council of the British Medical Association be instructed to oppose it by all possible means.

The Future of Medical Practice

That medical men are individualists is well proved by the evidence given by members of the profession before the Parliamentary Joint Committee on Social Security. While many of the witnesses have attempted to avoid committing themselves to any one policy for the reorganization of medical practice, a diversity of opinions has been expressed. Of some sixteen doctors who have given evidence before the committee, four were opposed to any radical change in the present system of medical practice, four preferred "fee for service" basis of payment or a scheme based on that functioning in New Zealand, four were in favor of a salaried medical service and two openly opposed it, three were wholly noncommittal and seven of the sixteen emphasized the importance of maintaining the personal relationship between doctor and patient.

Social Trends in Australian Medical Practice

Various schemes for a general medical service for Australia are now under consideration. These include (*a*) national health insurance as proposed under the National Insurance and Pensions Act of 1938, (*b*) the plan of the federal council of the British Medical Association in Australia for a medical service on a capitation fee basis, limited to a fixed income group of the population, (*c*) a scheme for medical, hospital and related benefits such as is in operation in New Zealand, where the "fee for service" system and the capitation system of payments are worked concurrently, (*d*) a salaried medical service such as that outlined by the National Health and Medical Research Council or by the Victorian Branch Council of the British Medical Association in Australia, or (*e*) evolution on the present basis of practice, without radical change or government control.

The inclusion of medical benefits under a national insurance scheme is not supported by any section of the community. The government is apparently in favor of a salaried medical service, but a large part of the medical profession is opposed to it. A considerable group of medical men consider that any radical change in the existing system of practice is unnecessary. The profession as a whole is of the opinion that no fundamental changes should be made before the end of the war.

Venereal Disease Control in the Army

Since the beginning of the war the incidence of venereal disease, except syphilis, has in this country remained surprisingly low. Measures adopted by the Australian army to combat the disease include lectures given by specialists to army medical officers and to combatant officers and noncommissioned officers, who in turn are expected to impart their knowledge to troops of their unit. Regimental medical officers are instructed to give frequent talks on the subject to their own particular units, and relevant articles written in nontechnical language for the education of the soldier are published from time to time in the army magazine *Salt*.

The army and civil authorities cooperate fully in tracing sources of infection and in bringing them under medical control. A monthly meeting, attended by commonwealth and state authorities, together with representatives of the services, including the United States Army, is held for the purpose of discussing the latest methods of prophylaxis and treatment and the means for coordinating efforts between the services.

Schools for the training of medical personnel in the prophylaxis of venereal disease are held at a special army hospital, and from these schools the staffs for various prophylactic depots are selected. The prophylactic depots, which have been established in large cities, in all standing camps and in numerous country towns where there are concentrations of troops in the vicinity, are built to standard design, efficiently equipped and open day and night. No names or regimental numbers are recorded, but prophylactic measures are withheld from men showing signs of venereal disease, which are reported to a medical officer. Condoms and "blue light" outfits containing a silver protcinate and mild mercurous chloride ointment are issued free on the application of troops proceeding on leave. An adaptation of a talking film produced by the Medical Corps of the United States Army is being exhibited to all services.

Special medical inspection is made of all troops on their entering camp, at various times during training, and before they go on draft. No diagnosis is attempted or treatment given in the field, but suspected cases are evacuated immediately to a special army hospital.

Army personnel suffering from syphilis were originally discharged as medically unfit and were reported to the director of social hygiene, who instructed them to report to a civil practitioner or to the board of health. Many of these men reenlisted after completing their course of treatment. By a more

recent arrangement soldiers infected with syphilis are treated at special hospitals until noninfective and then are drafted to an employment company for duty while continuing their weekly injections.

Control of Contraceptives

During the past few years the general public has been increasingly menaced by "quack" commercial concerns, which have been capitalizing on the emphasis placed on venereal disease in wartime. Many have been sending literature relating to articles used for contraceptive purposes indiscriminately through the post or delivering it from house to house as part of advertising campaigns, and a large group of individuals have established themselves profitably as "consultants" on matters relating to birth control and other sex matters. In Victoria a few years ago an act was passed giving very stringent control over advertising and display, but in the other states no such control existed. Recently, however, the commonwealth government under national security regulations made it illegal to display, advertise or promote the sale of any article as a medicine, instrument or appliance for the alleviation of venereal disease or the prevention of contraception.

BRAZIL

(From Our Regular Correspondent)

June 14, 1943.

A New Antihemorrhagic Agent

In its issue of May 31, 1941, page 2521, THE JOURNAL published the conclusions of Drs. Eduardo Vaz and Mario Pereira of the Instituto Pinheiros, São Paulo, Brazil, in their studies on the action of snake venom as an antihemorrhagic agent (bothropase). Recently Dr. Alberto Barbosa Hargreaves of the University of Rio de Janeiro has studied the jararaca venom (Botrops jararaca) so as to obtain thromboplastic material in dosage of prothrombin. The solution of crystallized snake venom in a concentration of 1:15,000 is added to an equal amount of a solution of calcium chloride in a concentration of 1.11 per cent. From this mixture 0.2 cc. is added to 0.1 cc. of plasma. The time between the addition to plasma and the beginning of the formation of net of the fibrin is noted by a chronometer. The operation is repeated with diluted plasma until the concentration of 20 per cent, and curves are made after the dilution. By this method curves are obtained like those with the use of rabbit's brain thromboplastin. The author concluded that the action of the mixture snake venom plus calcium plus plasma is equal to the thrombokinase plus calcium plus prothrombin. According to comparison with the results obtained with Russel viper venom, the snake venom demonstrated a powerful action. The differences noted in the highest dilution are probably due to the minor power of the viper venom in relation to the jararaca venom.

Neuromas of the Appendix and Chronic Appendicitis

Dr. João Montenegro of the Instituto Adolfo Lutz of São Paulo made recently a general survey of the so-called neuromas of the appendix mucosa as the cause of appendalgia. He reviewed the works of Masson, Maresch and Rössle on the matter and accepts the hypothesis that the nervous hyperplasia of the mucosa possibly results from inflammation stimuli, but these structures are not amputation neuromas.

Regarding the clinical meaning of such structures, Montenegro emphasizes the difficulty in establishing the facts. The false conclusions come perhaps not so much from a too short follow-up postoperative period as from unreliable information furnished by the patients whether consciously or, more commonly, subconsciously. He thinks that the high percentages of cure formerly reported after operations for chronic appendicitis were largely exaggerated and, on such a false basis, wrong conclusions were drawn regarding the value of the minor pathologic findings of the appendix. He says that one may admit that very exceptionally these so-called neuromas of the mucosa may be so numerous and bulky as to cause stenosis of the appendix lumen and give rise to disease curable by appendectomy; but that is nothing compared to the enormous number of patients operated on for chronic appendicitis in whose appendix there were neuromas with or without active inflammation; in these cases the cure was not obtained because of a chronic typhlocolitis.

Montenegro reports 45 cases in which he operated with the diagnosis of chronic appendicitis. The histologic sections of the appendix were stained by the trichromic method of Masson and some by silver impregnation. In 9 cases the so-called neuromas were found. Only 1 of these patients was cured, but in his appendix there was also a focus infiltrated with leukocytes situated in the muscular coats and extending down to the submucosa, occupying an area of about 1 millimeter. Five of the patients were not relieved of their symptoms and they have now a chronic nonspecific colitis, which they probably had concomitantly with the appendicitis.

Since the symptoms of chronic appendicitis are as a rule equal to those of chronic typhlitis and since these two disorders often coexist, it is impossible in such cases to assign the roles played by the appendix lesions.

Chagas Disease

Chagas disease is well known as a peculiar tropical disease (trypanosomiasis) described by a Brazilian scientist, Dr. Carlos Chagas of the Instituto Oswaldo Cruz, Manguinhos, Rio de Janeiro. Until a few years ago it was believed that this disease was transmitted only by wild insects. Although Chagas had verified infestation of cats and dogs by the parasite of the American trypanosomiasis, it has not been proved until now that those animals can transmit the disease to human beings. Recently, as a result of researches carried out in a country village of the state of Rio Grande do Sul, Dr. D. J. Clausell demonstrated that the dog is the vector of the parasite and responsible for Chagas disease in a district where no wild insects are to be found.

Marriages

ROCKWOOD WILDE BULLARD JR., St. Claire, Mich., to Miss Maryetta Moylan Fitts of Drewrys Bluff, Va., in Chicago, April 24.

ALEXANDER J. STEIGMAN, Philadelphia, to Miss Katherine Colvin of Arlington Heights, Ill., in Salisbury, England, June 26.

SAMUEL JOHNSON FAIRSTEIN to Miss Alice M. Atwell, both of Mount Vernon, N. Y., at Norfolk, Va., June 28.

JAMES STUART KNIPE, San Jose, Calif., to Miss Kathleen Mary Newman of Clear Lake, Iowa, June 8.

JAMES N. PROFFITT, Nashville, Tenn., to Miss Ruth Elizabeth Goddard of Alcoa in Maryville in June.

WILLIAM JEROME BRUCKNER, Brooklyn, to Miss Alice Jeanne Lamb at Wellington, New Zealand, April 6.

JULIAN CARR LENTZ JR., Durham, N. C., to Miss Mary Nell Lee of Maryville, Tenn., in Athens, Tenn., June 19.

HUGH CATHCART, Charleston, S. C., to Miss Marguerite McDonnell in Washington, D. C., June 19.

FREDERICK GEORGE KRONCKE, Roanoke Rapids, N. C., to Miss Jeannette Valentine of New York, June 4.

HENRY L. WATSON, Tampa, Fla., to Miss Tallulah Josephine Newman of Woodruff, S. C., May 26.

RUSSELL PEYTON HARRIS JR., Newell, N. C., to Miss Bernice Carolyn Carter of Asheville, June 12.

DONALD WALTERS, Charlottesville, Va., to Miss Babette R. Rothschild in Philadelphia, June 3.

WILLIAM L. BUNCH JR. to Miss Lucile Stevens, both of Fayetteville, Ark., June 16.

Deaths

Clifford Black Walker ✠ Los Angeles; Johns Hopkins University School of Medicine, Baltimore, 1911; clinical professor of surgery (ophthalmology) at the University of Southern California School of Medicine; formerly professor of clinical ophthalmology at the College of Medical Evangelists; at one time assistant in ophthalmology at the Harvard Medical School, Boston; served as a member of the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society, Association for Research in Ophthalmology, Inc., Western Ophthalmological Society and the Pacific Coast Oto-Ophthalmological Society; past president of the Los Angeles Society of Ophthalmology and Otolaryngology; served on the staff of the California Hospital, Eye and Ear Hospital, Good Hope Clinic, Los Angeles County Hospital and the Hospital of the Good Samaritan; formerly on the staff of the Peter Bent Brigham Hospital, Boston; in 1914 received the first Knapp Medal from the Section on Ophthalmology of the American Medical Association for his paper on "Topical Diagnosis of the Hemiopic Pupillary Reaction and the Willbrand Hemianopic Prism Phenomenon, with a New Method of Performing the Latter"; aged 58; died, July 3.

Murray Snell Danforth ✠ Providence, R. I.; Johns Hopkins University School of Medicine, Baltimore, 1905; specialist certified by the American Board of Orthopaedic Surgery, Inc.; recently elected president and formerly vice president of the Rhode Island Medical Society; past president of the Providence Medical Society; member of the American Orthopaedic Association, American Academy of Orthopaedic Surgeons and the New England Surgical Society; chairman of the Rhode Island Committee for Crippled Children; fellow of the American College of Surgeons; served as a major in the medical corps of the U. S. Army during World War I; chief, fracture service and consultant in the orthopedic service, x-ray and physical therapy department, Rhode Island Hospital; consulting orthopedic surgeon to the Butler Hospital and Charles V. Chapin Hospital, Providence, South County Hospital, Wakefield and the Westerly (R. I.) Hospital; aged 64; died, June 5, of cerebral hemorrhage.

Harold Ward Dana ✠ Brookline, Mass.; Harvard Medical School, Boston, 1905; assistant in bacteriology at his alma mater from 1911 to 1913; formerly instructor in clinical medicine, assistant professor of theory and practice of medicine, associate professor of medicine and clinical professor of medicine at the Tufts College Medical School, Boston; specialist certified by the American Board of Internal Medicine; served as a major in the medical corps of the U. S. Army during World War I; fellow of the American College of Physicians; member of the American Association for the Advancement of Science and the American Heart Association; at one time on the staff of the Boston City Hospital; aged 65; died, May 8, of pneumonia.

Stella May Gardner, Chicago; Northwestern University Woman's Medical School, Chicago, 1899; member of the Illinois State Medical Society and the American Society of Clinical Pathologists; specialist certified by the American Board of Pathology, Inc.; inspector of schools from 1899 to 1905 and member of the board for physical examination of teachers in public schools from 1905 to 1920; formerly professor of laboratory diagnosis and assistant professor of microscopic and clinical diagnosis at the University of Illinois College of Medicine; part owner of the Lincoln-Gardner Laboratory; aged 75; died, May 5, in the West Suburban Hospital, Oak Park, Ill., of myocarditis and arteriosclerosis.

Andrew Sloan ✠ Utica, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1902; member of the House of Delegates of the American Medical Association at the 1935 special session; fellow of the American College of Physicians; a charter member and for many years president of the Utica Academy of Medicine; formerly first vice president of the Medical Society of the State of New York; chairman of the medical advisory board, Utica Visiting Nurses and Child Health Association; member of the consulting service, Marcy (Pa.) State Hospital, the Children's Hospital Home and St. Luke's Home and Hospital, where he died, April 21, of cardiovascular disease, aged 63.

Chancey Adams ✠ Concord, N. H.; Medical School of Maine, Portland, 1891; formerly a druggist; member of the state board of health from 1903 to 1906; for many years county medical referee; past president of the Concord medical division of the bureau of pensions; formerly city physician and physician of the state prison; member of the advisory board during World War I; fellow of the American College of Surgeons; surgeon emeritus on the staff of the Margaret Pillsbury Hospital and consulting physician for the New Hampshire State Hospital; aged 82; died, May 11, of coronary sclerosis.

Frank Roscoe Makinson ✠ Oakland, Calif.; Oakland College of Medicine and Surgery, 1913; member of the House of Delegates of the American Medical Association in 1940; fellow of the American College of Surgeons; past president of the Alameda County Medical Society; councilor of the Seventh District of the California Medical Association; served as president of the Public Health League of California; on the staffs of the Peralta, Samuel Merritt and Providence hospitals; aged 57; died, April 18, in the University of California Hospital, San Francisco, of lymphosarcoma.

Lee L. Armistead, Campbell, Ala. (licensed in Alabama in 1892); aged 78; died suddenly, May 7, of coronary thrombosis and arteriosclerosis.

Engelbert Charles Bender ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1902; aged 63; on the staff of the Misericordia Hospital, where he died, May 3, of heart disease.

Frederick Otto Bowe ✠ Chicago; Northwestern University Medical School, Chicago, 1903; associate in obstetrics at his alma mater; served as a member of exemption board number 63 during World War I; past president of the staff, and chairman of the obstetric and gynecologic section of the Illinois Masonic Hospital; on the staffs of the John B. Murphy and Evangelical Deaconess hospitals; aged 64; died, May 20, of coronary thrombosis and arteriosclerosis.

Berrard Laurence Campbell, Milwaukee; Chicago Medical College, 1884; past president of the Waukesha County Medical Society; examiner for the draft board during World War I; aged 89; died, April 26, of probable carcinoma of the stomach.

Robert Cathcart Jr., Lakewood, Ohio; University of Edinburgh Faculty of Medicine, Scotland, 1938; member of the Ohio State Medical Association; diplomate of the National Board of Medical Examiners; medical director, civilian defense in the village of Fairview; aged 31; died, May 20, in Dallas, Texas, of miliary tuberculosis.

Ulysses Simpson Cordell, Macomb, Okla.; Chattanooga (Tenn.) Medical College, 1895; member of the Oklahoma State Medical Association; aged 74; died, May 28, of myocarditis.

John De Rosa ✠ Paterson, N. J.; Licentiate in Medicine, Surgery and Midwifery of the Apothecaries' Society of London, England, 1927; school physician; aged 43; on the staff of the Paterson General Hospital, where he died, April 22, of Hodgkin's disease.

William Roy Dillingham ✠ Salina, Kan.; University Medical College of Kansas City, Mo., 1908; served as a captain in the medical corps of the U. S. Army during World War I; on the staffs of St. John's and Asbury Protestant hospitals; aged 59; died, May 6, of hypertensive heart disease.

John A. Eichling, Gore, Okla.; Barnes Medical College, St. Louis, 1898; aged 72; died, April 17, of heart disease.

Frank Barnett Farnsworth ✠ Janesville, Wis.; Northwestern University Medical School, Chicago, 1898; one of the founders of the Munn-Farnsworth Clinic; aged 79; on the staff of the Mercy Hospital, where he died, May 5, of heart disease.

August Anton F. Gossow ✠ St. Charles, Mo.; Ph.G., St. Louis College of Pharmacy, 1886; Beaumont Hospital Medical College, St. Louis, 1892; past president of the St. Charles County Medical Society; served during World War I; lieutenant colonel in the medical reserve corps of the U. S. Army not on active duty; city physician; served two terms as coroner of St. Charles County; aged 74; died, April 27, in the Veterans Administration Facility, Jefferson Barracks.

William Henry Graham, Springfield, Ohio; Eclectic Medical Institute, Cincinnati, 1901; member of the Ohio State Medical Association; aged 67; died, April 13, of cerebral hemorrhage.

Benjamin H. Gray ✠ Richmond, Va.; University College of Medicine, Richmond, 1903; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; professor of clinical obstetrics at the Medical College of Virginia; member of the South Atlantic Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; vice president and on the staff of the Stuart Circle Hospital; on the staff of the Memorial Hospital; aged 64; died, April 15.

Edgar M. Hughes, Truscott, Texas (licensed in Texas under the Act of 1907); aged 74; died, April 15, in a hospital at Wichita Falls of cerebral arteriosclerosis.

Frank Louville Judkins, Lynn, Mass.; Medical School of Maine, Portland, 1879; member of the Massachusetts Medical Society; a founder, first president and for many years chief surgeon at the Union Hospital; aged 90; died, April 20, as the result of injuries received in an automobile accident in March 1942.

Mark Keller, McKeesport, Pa.; University of Pittsburgh School of Medicine, 1924; aged 43; died, April 28, of heart disease.

Clifford Paul Krohn, Morrow, Ohio; Eclectic Medical Institute, Cincinnati, 1904; served during World War I; aged 70; died, April 13, in Cortez, Fla., of heart disease.

Theophile Laurin, Lowell, Mass.; Baltimore University School of Medicine, 1895; University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1899; member of the Massachusetts Medical Society; aged 72; died, April 10, of heart disease.

Winbon Joseph Long, Townsend, Ga.; University of Georgia Medical Department, Augusta, 1899; aged 68; died in April of cardiovascular disease.

Franklin Fulforth Massey, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1903; served as a captain with the American Expeditionary Forces during World War I and held a reserve officer's commission until 1926; past president of the board of health of Womelsdorf, Pa.; at one time on the staff of the Homeopathic Hospital, Reading, Pa.; aged 61; died, April 9, in the Hahnemann Hospital of congestive heart disease, cirrhosis of the liver and uremia.

Charles Lee McCann, Dallas, Texas; College of Physicians and Surgeons, Baltimore, 1887; aged 83; died, April 16, of arteriosclerotic heart disease and bronchopneumonia.

Alvah John McCarter, Chicago; Bennett Medical College, Chicago, 1914; member of the Illinois State Medical Society; served on the staff of the American Hospital; aged 63; died, March 31, in Menominee, Mich., of chronic myocarditis.

Harold James McDonald ✦ Buffalo; St. Louis University School of Medicine, 1910; diagnostician for the city health department for many years; formerly city physician; served on the staffs of the Children's Hospital, Edward J. Meyer Memorial Hospital, St. Mary's Infant Asylum and Maternity Hospital and the Emergency Hospital of the Sisters of Charity, where he died, April 25, of acute congestive heart disease, aged 54.

Wilson Davis McNary ✦ Milwaukie, Ore.; Vanderbilt University School of Medicine, Nashville, Tenn., 1894; for many years superintendent of the Eastern Oregon State Hospital, Pendleton; aged 69; died, April 9, in the Good Samaritan Hospital, Portland.

Daniel Armel Metzgar, Braddock, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; member of the Medical Society of the State of Pennsylvania; surgeon in chief at the Braddock General Hospital; aged 71; died, April 17, at his home in Edgewood of coronary occlusion.

John Robert Monihan, Cleveland; University of Buffalo School of Medicine, 1912; served as a captain in the medical corps of the U. S. Army during World War I; member of the staffs of St. Luke's, St. John's and Lutheran hospitals; aged 52; died, April 21.

Arthur Rembrandt Moore ✦ Portsmouth, Ohio; Bellevue Hospital Medical College, New York, 1892; during World War I served overseas as a captain in the medical corps of the U. S. Army; city physician from 1935 to 1942; served on the staffs of the Mercy and Portsmouth General hospitals; aged 72; died, April 7, of angina pectoris.

Edwin Jarrett Nevill, Houston, Texas; University of Nashville (Tenn.) Medical Department, 1874; aged 93; died, May 16, in the Heights Hospital of heart disease.

William James O'Malley, Miami, Fla.; Maryland Medical College, Baltimore, 1912; served during World War I; aged 58; died, April 11.

Robert Linn Osborn, Clarksburg, W. Va.; University College of Medicine, Richmond, 1908; member of the West Virginia State Medical Association; veteran of the Spanish-American War and World War I; formerly a colonel in the West Virginia National Guard; member and formerly chairman of the Harrison County Selective Service Board number 1; city health officer; aged 66; died, April 13.

Thomas Joseph O'Toole ✦ Eagle Grove, Iowa; Omaha Medical College, 1896; past president of the Wright County Medical Society; president of the Security Savings Bank; part owner of the O'Toole Christensen Hospital; aged 72; died, April 14, of carcinoma of the throat.

Samuel M. Pittman, Galesburg, Ill.; Rush Medical College, Chicago, 1888; aged 80; died, April 16, in Galva of cerebral hemorrhage.

Max Lawrence Polowe, New York; University and Bellevue Hospital Medical College, New York, 1903; aged 63; died, April 14.

Saul Max Rubinow ✦ Newark, N. J.; University of Moscow Faculty of Medicine, Russia, 1897; served as a captain in the medical corps of the U. S. Army during World War I; examining physician for Selective Service Board number 23; served on the staffs of the American Legion Memorial, Presbyterian, St. James and Beth Israel hospitals; vice president of North American Building and Loan Association and a director of Barton Savings and Loan Association; aged 70; died, April 13, of coronary thrombosis and arteriosclerosis.

Matthew Maurice Ryan, Philadelphia, N. Y.; The Hahnemann Medical College and Hospital, Chicago, 1894; aged 75; died, April 23, of myocardial degeneration.

Campbell Sansing, Blossom, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1895; formerly associated with the U. S. Veterans Bureau; aged 70; died, April 3, of a self-inflicted gunshot wound.

Henry Timrod Schiffley ✦ Orangeburg, S. C.; Medical College of the State of South Carolina, Charleston, 1912; served overseas during World War I; aged 55; on the staff of the Tri-County Hospital, where he died, April 18, of chronic nephritis.

Guy Graham Shaw, Kaufman, Texas; College of Physicians and Surgeons, Little Rock, 1909; member of the State Medical Association of Texas; health officer of Kaufman; formerly health officer of Kaufman County; aged 57; died recently in a Dallas hospital.

Arthur Burton Shimer ✦ Atlantic City, N. J.; Medico-Chirurgical College of Philadelphia, 1896; also a pharmacist; for many years on the staff of the Atlantic City Hospital; aged 74; died, April 23, of coronary thrombosis.

Jacob Daniel Singer, Brighton, Mich.; Western Pennsylvania Medical College, Pittsburgh, 1896; for many years physician for the Detroit Recreation Camp near Brighton; member of the Volunteer Medical Corps during World War I; aged 84; died, March 15.

George C. Stemen, Denver; Fort Wayne (Ind.) College of Medicine, 1886; formerly on the staffs of the old Denver General Hospital, the Mercy and St. Joseph's hospitals; at one time a member of the state board of health; formerly secretary of the Denver branch of the medical division of the bureau of pensions; aged 78; died, April 10, of carcinoma of the prostate.

James Walter Stiles Jr., New York; University and Bellevue Hospital Medical College, New York, 1902; aged 63; died, April 13, of carcinoma of the prostate.

Michael Sullivan, Alhambra, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1878; at one time a pension medical examiner; served three terms as mayor of Adrian, Minn., and postmaster for four years; aged 91; died, April 17, in Glendale of chronic myocarditis and arteriosclerosis.

James Wallace Summers, Murfreesboro, Tenn. (licensed in Tennessee in 1896); aged 74; died, April 17, in the Rutherford Hospital of heart disease.

William Thomas Thornton ✦ Missoula, Mont.; American Medical Missionary College, Battle Creek, Mich., and Chicago, 1903; part owner of a hospital bearing his name; aged 65; died, April 28, of multiple myeloma.

Leopold Wedeles, Chicago; Deutsche Universität Medizinische Fakultät, Prague, Austria, 1890; member of the Illinois State Medical Society; served on the staff of St. Anthony de Padua Hospital; aged 80; died, March 18, of pulmonary embolism.

George Frank Zerzan ✦ Holyrood, Kan.; Rush Medical College, Chicago, 1900; also a pharmacist; served during World War I; aged 64; died, March 22, in St. John's Hospital, Salina, of arthritis and carcinoma of the pancreas.

CORRECTION

Commander Lipshutz Not Killed in Action.—Information recently received from Capt. Lowell F. Bushnell, M. R. C., U. S. Army, and the Surgeon General's Office, U. S. Navy, indicates that Lieut. Comdr. Joseph Lipshutz (MC), U. S. Navy, died on Dec. 17, 1942 of a self-inflicted bullet wound. THE JOURNAL, March 27, page 1107, reported the death of Lieutenant Commander Lipshutz under "Killed in Action."

Correspondence

"BROMIDISM"

To the Editor:—In The Journal, June 19, page 496, Nielsen reports a case of bromidism from prostigmine bromide. The data given, however, are inadequate for such a conclusion. The patient could not have taken the drug for more than two hundred days, and the larger doses much less time. She had raised the dose until she took 240 mg. per day. Had she taken 240 mg. for two hundred days it would equal 48 Gm.

Since the bromine content of prostigmine bromide is approximately 26 per cent, 48 Gm. would be equivalent to 15 Gm. of sodium bromide or 18 Gm. of potassium bromide. At death the patient's blood contained 225 mg. of bromide per hundred cubic centimeters. If the total blood volume was 4,000 cc. the total bromide in the blood would be equivalent to 9 Gm. of sodium bromide. With this volume of blood a person should weigh about 52 Kg. (115 pounds).

We may assume that the bromide in the blood and in the tissue fluids is dispersed in the same ratio as the chlorides. The total sodium chloride in the body is normally about 0.3 per cent of the body weight. For a person of 52 Kg. the sodium chloride therefore should be about 156 Gm., of which about 32 Gm. would be in the blood. If the blood contains the equivalent of 9 Gm. of sodium bromide, therefore, under our assumption which is based on accepted data, the amount of bromide in the body of the case cited would be $32 : 156 : : 9 : x$, or $x = 44$ Gm. of sodium bromide.

Since she consumed at most the equivalent of 15 Gm. of sodium bromide in two hundred days, a large proportion of which would have been excreted, the likelihood of prostigmine bromide causing bromidism seems absurd. If the amount of bromide at death was 225 mg. per hundred cubic centimeters of blood, it could not have come from the prostigmine bromide.

This seems to be another case of mistaken bromidism, of which there are already too many in the literature.

H. A. McGuigan, M.D., Chicago.

REPORTS OF SUCCESSFUL ARTIFICIAL DONOR INSEMINATIONS

To the Editor:—Artificial donor insemination is rightfully taking its place in the armamentarium of the physician who treats infertility. However, only when the husband has been shown to be absolutely sterile and all efforts to effect male fertility have failed should donor insemination be attempted. Reports of successful cases are appearing in the literature with greater frequency.

It is advisable, when reporting single isolated successful cases, that the physician (for the protection of the family concerned) deliberately omit certain of the details from his report. The following are examples of the type of facts which are best left unreported:

1. The date of the child's birth or the date of the successful impregnation.
2. The locale or environs of the mother's residence.
3. The age, sex and description of the baby.
4. Exact details of the past history of the barren couple which may possibly be used to throw light on their identity.

On the other hand, the complete details of the case history, with the solitary exception of the identity of the individuals concerned, should be available to interested reputable physicians or to recognized national medical committees.

Abner I. Weisman, M.D., New York.

"THE MENACE OF TYPHUS IN EUROPE"

To the Editor:—Reference is made to the editorial appearing in The Journal, June 5, on "The Menace of Typhus in Europe." The editorial is based on Biraud's summary of the typhus situation in Europe and North Africa and his account of the typhus vaccines now in use. In both Biraud's account and in the editorial the statement is made that in the presence of typhus epidemics a live virus vaccine should be used on account of the short period required for the development of protection.

The theoretical considerations concerning inoculations with a living virus to produce an active immunity are championed by some and condemned by others. The living virus used in the live virus typhus vaccines is not that of epidemic (louse borne) but of endemic (flea borne or murine) typhus. There has been no attenuation of this murine virus since adequate dosage in animals will produce the typical disease. From this then it would seem that we would expect to see actual cases of endemic (murine) typhus developing in a certain proportion of vaccinated individuals if (1) slightly too strong a dosage of living virus was administered or (2) the susceptibility of part of or the whole group was greater than expected. Actually both of these circumstances have occurred in field vaccination; witness Biraud's account of the Chilean experience which was written off as improper dosage, and the statements in previous reports that the reactions in Europeans are too severe to warrant its use.

In addition, it should be noted that a fair percentage of those inoculated get no protection whatever. Attention should be given to the fact that this vaccine, depending on the presence of a living agent, may and probably does contain contaminating organisms which per se may be dangerous. As to the evidence of the value of the living vaccines, it should be noted that in the field work in North Africa with this vaccine some two or more million individuals were vaccinated. It should also be noted that no adequate controls were used, and no definite conclusions as to its value in the control of epidemics is warranted.

The opinion of opponents to the use of a living typhus vaccine may be summed up by stating that it is the consensus that any living typhus vaccine so far suggested is too dangerous and too uncertain to use. This is surely true for our troops.

A great deal of work has been done in recent years on killed typhus vaccines, and our troops destined for areas where typhus is present are vaccinated with such a vaccine. The vaccine manufactured in America will produce antibodies within two weeks sufficient to protect animals against the subsequent inoculation of the living agent of the disease. Killed vaccine also employs strains of epidemic (louse borne) typhus for protection against the epidemic (louse borne) type of the disease. The vaccine produces in man less reaction than typhoid vaccine. This vaccine can be and is now being produced in practically unlimited quantity. The evidence as to its value may be summed up by stating that it apparently gives good protection against death from subsequently acquired typhus and may so modify a later attack of the disease as to warrant the hope that lice cannot become infected by feeding on such a patient. Whether or not an epidemic of typhus can be controlled by any vaccine alone has not as yet been determined. The killed vaccine is sterile and therefore entirely free of danger of infection caused either by the presence of living typhus rickettsiae or by other organisms.

The control of epidemics of typhus lies in proper care and protection of cases and efficient delousing measures. Vaccine (killed) should be used as an adjunct.

R. E. Dyer, M.D., Bethesda, Md.
Director, National Institute of Health.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, July 10, page 765.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* August 2-4. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers, Sept. 27. *Oral.* Philadelphia, Nov. 5-6. Final date for filing application is August 16. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE. *Oral.* New Orleans, Aug. 10-11. Final date for filing application is Aug. 1. *Written.* Oct. 18. Final date for filing application is Sept. 1. Asst. Sec., Dr. William A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Locally, Feb. 12. Final date for filing application is Nov. 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral. Parts I and II.* Chicago, Oct. 8-9. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Written and Oral. Part I.* New Orleans, Oct. 8-9. New York, Oct. 15-16. Chicago, Oct. 22-23. San Francisco, Oct. 29-30. Final date for filing application is Aug. 10. *Written and Oral. Part II.* Chicago, Jan. 21-22. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans, Louisiana.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago. Oct. 6-9. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Iowa.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Oct. 8. *Oral.* New York City, Nov. 20-21, and Cincinnati, Dec. 11. Final date for filing applications is Aug. 10. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Written.* Locally, Oct. 30. *Oral.* Locally, Dec. 20-21. Final date for filing application is Sept. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF SURGERY: *Written. Part I.* Oct. 7. Final date for filing application is Aug. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, February. *Written.* Various centers, December. Final date for filing application is Nov. 1. Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis, Minn.

Miscellany

THE EARLIEST DEMONSTRATION OF THE TUBERCLE BACILLUS IN THE UNITED STATES

Baldwin[1] writes that "Edward L. Trudeau was one of the earliest in America to appreciate the discovery made by Koch in 1882. He did not have the advantage of first hand contact with Koch as did Welch, Prudden and H. P. Loomis. Nevertheless he quickly acquired the technic of staining the bacillus from Prudden and Hodenpyl of the old laboratory of the College of Physicians and Surgeons in New York, as has been so graphically told in his 'autobiography.' It is related that the late Surgeon General George M. Sternberg was believed by his wife to be the first to stain the tubercle bacillus in America. However, Dr. T. Mitchell Prudden visited Koch's laboratory in 1885 and brought back a thorough knowledge of the methods of the master."

According to Winslow,[2] the elder Flint brought the news of Koch's discovery to Welch, who before many weeks were past succeeded in staining the bacillus by Koch's methods and also demonstrated it to his colleagues.

In the biography of her husband, Mrs. Sternberg[3] states (p. 87) that in 1881 "he demonstrated and photographed the tubercle bacillus discovered by Professor Koch earlier in the same year. I am informed on good authority that this was the first demonstration of the organism in America." A statement to the same effect is made on page 255. Obviously 1881 is a mistake, because Koch's announcement of his discovery was made on March 24, 1882.

Trudeau[4] was immediately impressed with the full significance of Koch's discovery. He could not read German and was much pleased to receive for Christmas, apparently in 1882, an English translation of Koch's paper. In his account of learning to stain the bacillus he does not state clearly just when he worked in Prudden's laboratory, perhaps in 1883 or 1884. In 1885 he was staining the bacillus for diagnostic purposes. "In the fall of 1885, as soon as I had equipped my little laboratory room I began to work. At first my knowledge was limited to the detection of tubercle bacilli in the secretions of patients" (p. 201). At this time he began to cultivate the bacillus and he was undoubtedly the first one to do so in this country.

No account of the early study of the tubercle bacillus in this country is adequate without mention of the remarkable work of William T. Belfield and Henry Gradle.[5]

When Koch's announcement was made, Belfield, then in Vienna, described the event in letters to a Chicago medical journal.[6] Soon after his return he showed the tubercle bacillus at a meeting (October 1882) of the Chicago Pathological Society.[7] This appears to be the first public demonstration of the bacillus in this country. Belfield remarked that on a recent occasion he had found the bacillus in *22* specimens of sputum. In February 1883 he gave the Cartwright Lecture[8] in New York, discussing in detail the discovery and the significance of the tubercle bacillus (pp. 67-95) as well as the methods of staining it (p. 129). He emphasized the diagnostic value of examining the sputum for the bacillus with clinical examples (p. 90). In the summer of 1883 he stained the bacillus in the course of a necropsy in a case of pulmonary tuberculosis before medical students in the morgue of the Cook County Hospital, Chicago.[9]

In the same year, 1883, Henry Gradle,[10] on his return from study abroad, where he had worked with Koch, also published a book on bacteria and disease, in which the tubercle bacillus (pp. 152-170) and its staining (p. 162) are described in detail. On page 162 he wrote: "Apart from the fundamental scientific importance of Koch's work, it has almost at once led to immediate practical results, Koch's own statement, that the bacilli are often present in the sputum of consumptives, has been confirmed by a host of other observers so that the microscopic examination of the sputum possesses now a decided diagnostic value. It is necessary, hence, to become acquainted with the mode of demonstrating the bacilli."

The importance of microscopic examination in the diagnosis of consumption was emphasized also in a paper with Woltman early in 1883.[11]

Belfield and Gradle were among the first, if not the very first, to demonstrate adequately the tubercle bacillus in this country. It is noteworthy too that the book each wrote is one of the earliest books in the English language on the relations of micro-organisms to disease.

1. Baldwin, E. R.: History of Tuberculosis Research in America, Yale J. Biol. & Med. **15:** 303 (Jan.) 1943.

2. Winslow, C.-E. A.: The Life of Herman M. Biggs, Philadelphia, Lea & Febiger, 1929, p. 56.

3. George Miller Sternberg, A Biography, by His Wife, Martha L. Sternberg, Chicago, American Medical Association, 1920.

4. An Autobiography of Edward Livingston Trudeau, Philadelphia and New York, Lea & Febiger, 1916. Trudeau, E. L.: An Experimental Research on the Infectiousness of Nonbacillary Phthisis, Am. J. M. Sc. **89:** 361 (Oct.) 1985.

5. Hektoen, Ludvig: Notes on the History of Bacteriology in Chicago, Bull. Soc. Med. History of Chicago **5:** 3 (Jan.) 1937.

6. Chicago M. J. & Examiner **44:** 613 (May), **45:** 37 (June), 170 (July) 1882.

7. Chicago M. J. & Examiner **45:** 516 (Oct.) 1882.

8. Belfield, W. T.: On the Relations of Micro-Organisms to Disease: The Cartwright Lectures Delivered Before the Alumni Association of the College of Physicians and Surgeons, New York, Feb. 19, 21, 24 and 27, 1883. M. Record **23:** 197, 225, 253, 281, 309, 1883. These lectures were published in book form under the same title by Trow, 1883.

9. Holmes, B.: Medical Education in Chicago in 1882 and After, Medical Life **28:** 9 (Jan.) 1921.

10. Bacteria and the Germ Theory of Disease, Eight Lectures Delivered at the Chicago Medical College by Dr. Henry Gradle, Professor of Physiology, Chicago Medical College, Oculist to the Michael Reese Hospital, Chicago, W. T. Keener, 1883.

11. Gradle, Henry, and Woltman, H.: The Diagnosis of Consumption by Means of the Microscope, Medical News **42:** 184 (Feb. 17) 1883.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Angulation Following Complete Fracture of Humerus.—The plaintiff, a boy aged 14 years at the time, suffered "a complete breaking" of the humerus of the left arm approximately at the junction of the lower and middle thirds of the humerus, the two broken ends of which overlapped. The child was taken to a hospital operated by the defendant partnership of physicians and was attended at times by different physicians, all of whom were orthopedists and were either employees of the partnership or copartners in the group. The fracture was reduced and traction applied. Some time later, after the application of a plaster cast, the child was released from the hospital but returned at different times for observation and treatment. Considerable difficulty was experienced in effecting a union, and when union was effected angulation was present, the arm was ½ inch shorter than before the fracture and there was a large knob of bone at the point of union. An action for malpractice was instituted against the copartnership and the physicians who attended the patient. The jury returned a verdict for the patient for $8,500 and from a judgment on the verdict and from an order denying a motion made by the defendant physicians for judgment notwithstanding the verdict, the physicians appealed to the district court of appeal, second district, division 1, California.

In effect, the sole question for the determination of the appellate court was whether or not under the applicable law there was sufficient evidence in the record to support the verdict of the jury in favor of the patient. The degree of care and skill, said the court, required of physicians in treating patients is recapitulated in *Adams* v. *Boyce*, 37 Cal. App. (2d) 541, 99 P. (2d) 1044, in part, as follows:

> The law on the subject of the care and skill required of physicians in the treatment of patients is well settled and was epitomized in the case of *Hesler* v. *California Hospital Co.*, 178 Cal. 764, 767, 174 P. 654, 655, where it was said that the law requires of the physician only "first, that he shall have the degree of learning and skill ordinarily possessed by physicians of good standing practicing in that locality, and, second, that he shall exercise reasonable and ordinary care and diligence in treating the patient and in applying such learning and skill to the case. The law takes cognizance of human weakness and liability to err in the application of skill and learning and it requires only the exercise of reasonable and ordinary care and diligence to avoid error."
>
> Concerning the obligations assumed by a physician when he undertakes to treat a patient, it is said in the same case at page 766 of 178 Cal. at pages 655 of 175 P.:
>
> "A physician and surgeon, by taking charge of a case, impliedly represents that he possesses, and the law places upon him the duty of possessing, that reasonable degree of learning and skill that is ordinarily possessed by physicians and surgeons in the locality where he practices, and which is ordinarily regarded by those conversant with the employment as necessary to qualify him to engage in the business of practicing medicine and surgery. Upon consenting to treat a patient, it becomes his duty to use reasonable care and diligence in the exercise of his skill and the application of his learning to accomplish the purpose for which he was employed. He is under the further obligation to use his best judgment in exercising his skill and applying his knowledge." *Pike* v. *Honsinger*, 155 N. Y. 201, 209, 49 N. E. 760, 762, 63 Am. St. Rep. 655. "The difficulties and uncertainties in the practice of medicine and surgery are such that no practitioner can be required to guarantee results, and all the law demands is that he bring and apply to the case in hand that degree of skill, care, knowledge, and attention ordinarily possessed and exercised by practitioners of the medical profession under like circumstances." *Zoterell* v. *Repp*, 187 Mich. 319, 330, 153 N. W. 692, 695. "It is never enough to show that he has not treated his patient in that mode, nor used those measures, which in the opinion of others, even medical men, the case required, because such evidence tends to prove errors of judgment, for which the defendant is not responsible, as much as the want of reasonable care and skill, for which he may be responsible." *Leighton v. Sargent*, 27 N. H. 460, 474, 59 Am. Dec. 388.

What is or what is not, continued the court, proper practice on the part of the physician is uniformly a question for experts and can be established only by the testimony of such experts. But it is not required that the evidence demonstrate conclusively and beyond possibility of a doubt that the defendants' negligence was the proximate cause of the plaintiff's injury; it is sufficient if there is substantial evidence which reasonably supports the judgment.

A medical expert witness called by the plaintiff was asked a hypothetical question concerning the treatment rendered by the defendant physicians predicated on (1) an alleged failure by the defendant physicians to have roentgenograms of the patient's arm taken frequently enough to keep them advised of the progress of the healing of the broken bone, (2) a failure properly to read or evaluate the roentgenograms themselves and then to take the necessary steps to correct the apparent progress of angulation of the union, (3) a possibility that too much traction had been applied, thereby keeping the broken ends of the bone apart so that they did not unite properly and straight, (4) a failure to maintain traction and casts on the arm for a sufficient length of time and (5) a failure to take proper measures to correct the angulation before the broken bone formed in a solid union impossible of being straightened except by operative means. In answer to the question and assuming the truth of the assumed facts, the witness stated that, in his opinion, the defendants did not exercise that degree of care and skill exercised and possessed by the average physician practicing in the locality and that "there was a degree of carelessness through the entire procedure," as stated in the hypothetical question. The testimony of this witness, in the court's opinion, was sufficient to support the verdict of the jury against the defendant physicians. Finally, said the court, when there is substantial evidence, as here, "from which the jury could infer that the course of treatment persisted in by defendant [sic] was not of that care, diligence and skill possessed and used by prudent, skilful and careful practitioners of medicine practicing in the same vicinity" a reviewing court will not set aside a determination of a jury that the defendant had been negligent.

The trial court instructed the jury that since the defendant physicians had held themselves out to be specialists and experts in the treatment of injuries such as that sustained by the plaintiff they must have and use the same degree of knowledge and skill ordinarily possessed and used by other specialists and experts of the same type in the particular locality and would be held to a standard of care and skill higher than that possessed and utilized by the ordinary practicing physician. The defendants contended that this instruction told the jury that there was required in this case a higher standard of care than generally in actions of this kind. But, answered the court, all defendants in this case were orthopedists and held themselves out as such. An orthopedist is a surgeon engaged in that branch of medicine which deals with the correction of deformities and chronic diseases of the joints and spine and, as stated in *Hopkins* v. *Heller*, 59 Cal. App. 447, 210 P. 975:

> One who holds himself out as a specialist in the treatment of a certain organ, injury or disease, is bound to bring to the aid of one so employing him, that degree of skill and knowledge which is ordinarily possessed by those who devote special study and attention to that particular organ, injury or disease, its diagnosis and its treatment, in the same general locality, having regard to the state of scientific knowledge at the time.

The instruction complained of, concluded the court, correctly sets forth the duty of the defendants in this case.

The judgment in favor of the patient was accordingly affirmed. —*Sansom v. Ross-Loos Medical Group, 134 P. (2d) 927 (Calif., 1943).*

Society Proceedings

COMING MEETINGS

Oregon State Medical Society, Portland, Sept. 4-5. Dr. Thomas D. Robertson, St. Vincent's Hospital, Portland, Secretary.

Utah State Medical Association, Salt Lake City, Aug. 27-28. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Fort Wayne, Ind.

10:121-160 (April) 1943

Gastric Acidity, Nutritional Hydration and Appetite. F. Hoelzel.—p. 121.
Observations on Starvation Diets and Hunger Ketosis. G. F. Dick, M. G. Goldner and T. P. Singer.—p. 124.
Treatment of Diabetes Mellitus Without Regard to Hyperglycemia and Glycosuria. H. J. John.—p. 129.
Some Problems in Diagnosis of Cancer of Colon and Rectum. A. Trasoff and D. H. Goodman.—p. 132.
Ketosis in Health and Disease. J. H. Barach.—p. 134.
Postural Treatment of Biliary Colic (Its Relation to Prevention of Acute Cholecystitis). D. MacDonald.—p. 138.
Biliary Constipation. H. Gauss.—p. 141.
Gross Hemorrhage from Rectum. C. J. Drueck.—p. 144.
Metastatic Melanotic Sarcoma to Ileum Causing Intussusception. J. R. Phillips.—p. 147.
Diverticulum of Gallbladder: Review of Literature and Report of Case. M. Golob.—p. 148.

American Journal of Hygiene, Baltimore

37:121-238 (March) 1943

Studies on Nutrition of Tapeworms. A. C. Chandler.—p. 121.
Urban Air Pollution and Respiratory Diseases. C. A. Mills.—p. 131.
Effect of Trichomonas Vaginalis on Tissue Culture Cells. Mary Jane Hogue.—p. 142.
Duck as Host for Avian Malarias. R. D. Manwell and A. E. Hatheway.—p. 153.
*Epidemiology of Pneumococcus: Prevalence of Pneumococci in Throats of Group of Homeless Men. W. G. Smillie, F. A. Calderone and Jeane M. Onslow.—p. 156.
Relationship Between Malaria Morbidity and Parasitemia. Margaret E. Rice and R. B. Watson.—p. 164.
Experimental Studies on Larval Development of Dirofilaria Immitis in Certain Insects. W. A. Summers.—p. 173.
Nutritional Requirements of Tribolium Confusum Duval: II. Effect of Vitamin B Complex on Metamorphosis, Growth and Adult Vitality. B. A. Schneider.—p. 179.
Tuberculosis Studies in Tennessee: Morbidity and Mortality in White Households During Period of Observation. H. C. Stewart, R. S. Gass, Ruth R. Puffer and W. C. Williams.—p. 193.
Typhoid Vaccine Studies: VIII. Immunogenic Relationship Between V Forms of E. Typhosa and S. Ballerup. D. Longfellow and G. F. Luippold.—p. 206.
Occurrence of Salmonella in Retail Meat Products. W. B. Cherry, M. Scherago and R. H. Weaver.—p. 211.
Mouse Adapted Lansing Strain of Poliomyelitis Virus: III. Comparison with Strain of Mouse Encephalomyelitis Virus Isolated from Intestines of Normal Mice. L. E. Young and Mary C. Cumberland.—p. 216.
Failure to Demonstrate Synergism Between Diphtheria Toxin and Extracts of Corynebacterium Diphtheriae Gravis. M. Frobisher Jr. and Evelyn A. Mauss.—p. 225.
Antigenicity of Diphtheria Toxoid in Chicks, Mice and Rats. Evelyn A. Mauss and M. Frobisher Jr.—p. 234.

Prevalence of Pneumococci in Throats.—The report by Smillie and his collaborators is a summary of the results of a study, carried on from December to June of the years 1940 and 1941, of the prevalence of various types of pneumococci in the nasopharynges of a group of occupants of one of the New York City municipal lodging houses. The purpose of the study was to determine the spread from person to person of the various types of pneumococci under conditions most favorable for transmission. The authors hoped to detect the invasion of a virulent strain of pneumococcus before the occurrence of actual disease and to follow the dispersion of this organism through the community. In the 111 men all the standard pneumococcus types except I and XXXIII were encountered, as well as many unusual types. Conditions were highly favorable for the exchange of nasopharyngeal flora, and a multiplicity of types was found in many individuals, 1 man harboring seven different pneumococcus types. Many men were persistent carriers of the same type of pneumococcus. A type II pneumococcus invaded the community about February 24. Although everything seemed favorable for its dissemination through the group, only 4 men acquired the strain, and no lobar pneumonia or other serious consequences resulted. This is contrary to the experience in previous studies.

American Journal of Medical Sciences, Philadelphia

205:313-468 (March) 1943

Vasomotor and Other Reactions to Injuries and Venous Thrombosis. J. Homans, Boston.—p. 313.
*Some Observations on Gastritis and Peptic Ulcer. Mary M. Maher, M. M. Zinninger, L. Schiff and N. Shapiro, Cincinnati.—p. 328.
Late Postoperative Follow-Up Studies on Patients with Recurrent Appendicitis. G. J. Willauer, Philadelphia, and J. F. O'Neill, Winston-Salem, N. C.—p. 334.
*Absorption, Excretion and Toxicity of Penicillin Administered by Intrathecal Injection. C. H. Rammelkamp and C. S. Keefer, Boston.—p. 342.
Fibrinolysin Test Following Hemolytic Streptococcus Infections. H. Yannet and A. Leibovitz, Southbury, Conn.—p. 350.
Specific Gravity of Whole Blood and Serum. P. A. Gray and A. H. Elliot, Santa Barbara, Calif.—p. 356.
Chemical Fractionation from Exudates of Factor Promoting Leukocytosis. V. Menkin and M. A. Kadish, with assistance of A. A. Warren, Boston.—p. 363.
* Erythroblastosis Fetalis and Blood Factor Rh. D. H. Kariher and H. A. Spindler, Rochester, N. Y.—p. 369.
Absorption of Sulfadiazine After Oral and Intraperitoneal Administration in Dogs and After Intraperitoneal and Local Administration in Man. A. M. Ambrose, A. Griswold and J. E. Hamilton, Louisville, Ky.—p. 376.
Prevention of Infectious Ulcerative Cecitis in Young of Rats by Chemotherapy of Mother. A. L. Bloomfield and W. Lew, San Francisco.—p. 383.
Clinical and Electroencephalographic Observations in Severe Epilepsy Under Treatment. D. Goldman, Cincinnati.—p. 388.
Minerals and Toxemias of Pregnancy. C. T. Javert, Cesira Macri and Katherine Kuder, New York.—p. 399.
*Treatment of Lead Poisoning by Sodium Citrate. S. S. Kety and T. V. Letonoff, Philadelphia.—p. 406.
Specific Dynamic Action of Protein. M. S. Abel, Philadelphia.—p. 414.

Gastritis and Peptic Ulcer.—Of 40 patients with peptic ulcer, Maher and her associates made satisfactory gastroscopic examinations of 28. Thirty-six of the patients were subjected to a partial gastrectomy and 4 were studied post mortem following injection of the stomach with solution of formaldehyde immediately after death. The criteria of gastritis were essentially those of Schindler. Atrophic gastritis of an arbitrary grade 1 to 4 was observed microscopically in 36 of the 40 patients. The gastritis did not vary essentially from that of 35 patients with gastric cancer except that hyperplasia was present in 16. The gastric mucosa appeared normal in 12, superficial gastritis was present in 10 and either hypertrophic gastritis or hypertrophic and superficial gastritis was present in 6 of the 28 patients on whom satisfactory gastroscopic examinations were made within one month of resection or necropsy. Microscopically, atrophic gastritis was present in the 12 cases that were normal at gastroscopy and in 13 of the remaining 16. This discrepancy may be explained partially by the presence of some atrophic gastritis in the so-called normal stomach and by the masking of atrophic changes by superficial or hypertrophic gastritis. The fact that the gastritis associated with peptic ulcer is similar to that seen with gastric cancer suggests that the gastritis by itself may not be a specific precursor of either gastric cancer or peptic ulcer. The frequent microscopic evidence of atrophic gastritis in an apparently normal stomach indicates the necessity for further study of control groups of stomachs.

Penicillin Administered by Intrathecal Injection.—The effect of penicillin on certain types of staphylococcic and pneumococcic meningitis which failed to respond to the sulfonamide drugs was studied by Rammelkamp and Keefer. Penicillin appeared in the blood stream for several hours after its intrathecal injection into patients with meningitis and its excretion was increased, suggesting that penicillin is absorbed more rapidly when the meninges are inflamed. The results following injection into closed cavities were similar to those after intra-

thecal injections in normal subjects in that absorption was slow and the total amount excreted in the urine was small. Significant amounts of penicillin remained in the spinal fluid for twenty-four hours. An intrathecal injection of 10,000 Florey units into a normal subject was followed by nausea, vomiting and headache. When 5,000 Florey units were injected, the only toxic symptom was a mild headache. There was a slight increase in the number of cells in the spinal fluid without an increase in the intrathecal pressure. In the presence of meningitis or cerebral abscess the injection of 3,000 to 10,000 Florey units was not attended by toxic symptoms. Necropsy on 2 subjects revealed penicillin in significant concentrations in the cisterna magna and the third ventricle, indicating that after lumbar injections the antibiotic agent will diffuse throughout the ventriculosubarachnoid space.

Erythroblastosis Fetalis and Blood Factor Rh.—Six cases of fetal erythroblastosis are reported which, Kariher and Spindler state, support the thesis of isoimmunization of the mother by the Rh agglutinogen from the fetus as being responsible for erythroblastosis of the latter. Because of antepartum Rh studies on the mother of 1 of the infants, the subsequent delivery of an erythroblastotic infant was expected. The infant was treated by numerous transfusions of Rh —, anti Rh — blood. This therapy is recommended for all cases of erythroblastosis. The case of a "habitual aborter" is described in which the absence of the Rh factor in the mother seemed to be the cause of the repeated abortions. It is suggested that the term "erythroblastosis" be dropped and the conditions icterus gravis, fetal hydrops, hemolytic anemia and the like be included under the term "hemolytic disease of the newborn."

Sodium Citrate Treatment of Lead Poisoning.—Kety and Letonoff used sodium citrate in the treatment of 15 adult patients with lead poisoning. The administration of sodium citrate caused a definite fall in the concentration of lead in the blood of every patient. After twenty days of citrate therapy there was no value over 0.1 mg. per hundred grams. In a few patients the initial fall in blood lead was followed by a secondary rise during the course of the therapy. This rise was never great; the patients were free from symptoms during its occurrence and when the observations were continued the blood lead concentrations fell once more. Before citrate therapy the colic of 12 of the 15 patients required belladonna or opiates for its control. After citrate treatment was instituted these drugs were not necessary and abdominal pain did not recur. The one symptom that did not respond to citrate therapy was constipation. However, under citrate treatment 4 of the 7 so affected patients did improve. All patients had evidence of moderately severe anemia. In 3 of the 10 whose hemoglobin was determined before and after treatment a definite increase was shown, a slight increase in 3 and a slight decrease after citrate therapy in 4. Drugs containing iron were not used during the study. All patients experienced a definite general improvement and feeling of well being in addition to improvement in specific symptoms soon after citrate therapy was begun. No reactions attributable to sodium citrate or to lead were observed, nor did symptoms of alkalosis appear, and there was no significant change in alkali reserve or total base of the blood.

Annals of Internal Medicine, Lancaster, Pa.

18:271-444 (March) 1943

*Type VIII Pneumococcus: Development of Sulfadiazine Resistance, Transmission by Cross Infection, and Persistence in Carriers. A. W. Frisch, A. E. Price and G. B. Myers.—p. 271.

Review of Drastic Shock Therapies in Treatment of Psychoses. F. G. Ebaugh.—p. 279

Tuning Fork Auscultation: Test for Abdominal Adhesions. B. B. V. Lyon.—p. 297.

Allergy to Injectable Liver Extracts: Clinical and Immunologic Observations. S. M. Feinberg, H. L. Alt and R. H. Young.—p. 311.

Cardiac Problems in Wartime. P. D. White.—p. 323.

Myxedema Heart: Pathologic and Therapeutic Study. J. S. La Due. —p. 332.

Abdominal Pain in Pulmonary Thrombosis. W. S. Middleton.—p. 345.

Ten Years' Experience with Thorotrast Hepatosplenography. W. M. Yater and F. O. Coe.—p. 350.

Recording Sphygmotonograph: Machine for Continuous Recording of Systolic and Diastolic Arterial Pressure in Man. K. Lange.—p. 367.

Annals of Surgery, Philadelphia

117:321-480 (March) 1943

Continuous Caudal Analgesia in Surgery. J. L. Southworth, W. B. Edwards and R. A. Hingson.—p. 321.

Early Mortality of Burns as Influenced by Rapid Tanning and by Transfusions. R. Elman.—p. 327.

Goiter Incisions. F. H. Lahey.—p. 332.

Preoperative and Postoperative Use of Metal Tipped Gastroduodenal Tube as Aid in Surgical Treatment of Duodenal Obstruction in Newborn. E. P. Maris, A. C. McGuinness, H. F. Lee, J. E. Rhoads and W. E. Lee.—p. 348.

Congenital Cystic Dilatation of Common Bile Duct: Case Report and Review of Literature. T. A. Shallow, S. A. Eger and F. B. Wagner. —p. 355.

Indications for Jejunal Alimentation in Surgery of Peptic Ulcer. R. Colp and L. J. Bruckerman.—p. 387.

Diverticula and Variations of Duodenum. W. Ackermann.—p. 403.

Gastrojejunocolic Fistulas with Special Reference to Associated Nutritional Deficiencies and Certain Surgical Aspects. J. S. Atwater, H. R. Butt and J. T. Priestley.—p. 414.

Acute Ileus: Analysis of 130 Cases Operated on at Presbyterian Hospital, New York City, from 1936 to 1939, Inclusive; with Use of Miller-Abbott Tube in 1938 and 1939. Beverly C. Smith and F. T. Van Beuren.—p. 427.

Islet Cell Carcinoma of Pancreas with Metastasis. H. A. Hanno and R. W. Banks.—p. 437.

Cholesterosis of Gallbladder: Observations on 25 Cases Without Stones. K. M. Lewis and C. W. Peterson.—p. 450.

Late Invasion of Bladder and Prostate in Cancer of Rectum or Rectosigmoid Following Abdominoperineal Resection. G. D. Oppenheimer. —p. 456.

Chochliomyia Americana Infestation in Man: Case Report. R. O. Pearman and L. Haseman.—p. 468.

Archives of Internal Medicine, Chicago

71:443-582 (April) 1943

*Streptococcic and Pneumococcic Infections of Nose and Throat in Young Adults: Incidence, Epidemiology and Clinical Features. P. S. Rhoads and M. E. Afremow.—p. 443.

Renal Concentration Test Using Solution of Posterior Pituitary. H. C. Wall.—p. 454.

Studies on Action of Quinidine in Man: I. Measurement of Speed and Duration of Effect Following Oral and Intramuscular Administration. E. L. Sagall, C. D. Horn and J. E. F. Riseman.—p. 460.

Effects of Vitamin A Depletion in Young Adults. Sadie Brenner and Lydia J. Roberts.—p. 474.

Excretion of Coproporphyrin in Hepatic Disease: IV. Isolation and Identification of Urinary Coproporphyrin Isomers. S. Nesbitt.—p. 483.

Copper and Iron in Human Blood. A. Sachs, V. E. Levine, F. C. Hill and Rita Hughes.—p. 489.

Aneurysm of Heart. J. H. Crawford.—p. 502.

*Enterococcic Infections: Evaluation of Importance of Fecal Streptococci and Related Organisms in Causation of Human Disease. L. A. Rantz and W. M. M. Kirby.—p. 516.

Concentration of Carbon Dioxide in Expired Air in Heart Disease. P. K. Boyer and C. V. Bailey.—p. 529.

Kinetics of Respiration in Experimental Pulmonary Embolism. R. S. Megibow, L. N. Katz and M. Feinstein.—p. 536.

Electrocardiographic Changes with Exercise: Their Relation to Age and Other Factors. W. H. Barrow and R. A. Ouer.—p. 547.

Night Cramps and Quinine. A. Gootnick.—p. 555.

Liver and Biliary Tract: Review of Literature for 1942. C. H. Greene. —p. 563.

Infections of Nose and Throat in Young Adults.—Rhoads and Afremow found that hemolytic streptococci were responsible for about two thirds of the attacks of tonsillitis, pharyngitis, laryngitis and sinusitis in young adults. These diseases are probably more frequent and cause more disability than any other diseases affecting this age group. The serious results of allowing carriers of hemolytic streptococci to circulate in groups of young adults, such as soldiers in barracks, is apparent. Cultures should be made in all instances of infection of the throat or the nose. Serious consideration should be given to quarantining persons harboring hemolytic streptococci in the throat or the nose or green-forming cocci in the nose.

Enterococcic Infections.—Rantz and Kirby isolated enterococci from various materials obtained from more than 200 persons. Enterococci are bacteria of relatively low virulence and invasiveness but are not infrequently responsible for serious local or generalized infection. Enterococci whose normal habitat is the human bowel form a group of hemolytic and nonhemolytic streptococci of unique biologic properties and are members of the Lancefield group D. They are exceedingly resistant to the bacteriostatic action of sulfonamide compounds and are more frequently isolated from human clinical sources other than the respiratory tract than any other streptococci.

Archives of Otolaryngology, Chicago

37:463-608 (April) 1943

Osteomyelitis of Skull Resulting from Infection in Sinuses. W. L. Simpson.—p. 463.
Local Use of Sulfathiazole in Otolaryngologic Practice. R. A. Fenton. —p. 491.
*Local Use of Sulfathiazole Powder for Acute Pharyngeal Infections. M. S. Freeman.—p. 496.
On Planning Nasal Surgery. A. W. Proetz.—p. 502.
*Recoveries from Staphylococcic Meningitis Following Bacteriophage Therapy. W. J. MacNeal, Frances C. Frisbee and Anne Blevins. —p. 507.
Mediastinal Emphysema and Bilateral Simultaneous Pneumothorax Complicating Tracheotomy in an Adult. W. P. Work.—p. 526.
Subdural Abscess Complicating Frontal Sinusitis. B. S. Ray and H. Parsons.—p. 536.
Cyst of Larynx. N. Fox and R. Dinolt.—p. 552.
Constricting Double Aortic Arch: Report of Case. P. A. Herbut and T. T. Smith.—p. 558.
Anatomy and Physiology of Ear. J. R. Richardson.—p. 567.

Sulfathiazole Powder in Pharyngeal Infections.—Thirty-four patients with acute pharyngeal infections were treated by Freeman with topical application of sulfathiazole powder. The criteria for inclusion in the series were (1) a history of sore throat or dysphagia with or without systemic manifestations and (2) physical findings consistent with the diagnosis of acute infection of the pharynx or nasopharynx. Sulfathiazole powder was applied to the pharyngeal mucosa with a compressed air powder syringe until it thickly caked the involved areas. Nasopharyngeal applications were made through the nose or with a shortened eustachian tube catheter placed behind the soft palate. The dose varied between 1 and 2 Gm. per treatment. Much of this was lost by expectoration, but examination at one, two, three and four hour intervals following treatment revealed a surprisingly large amount of the powder clinging to the nasopharyngeal and pharyngeal mucosa, in the vallecula and in the crypts of the tonsils. The patients were instructed to avoid eating or drinking for two hours following treatment and were told to use no other form of therapy. Subjective improvement was noted in one to twenty-four hours after the first treatment, with an average of ten hours. Objective improvement was obtained in from twenty-four to fifty-six hours, with an average of 24.6 hours. From one to four treatments at twenty-four hour intervals were required. Of 18 of these patients, who were followed at twenty-four hour intervals with determinations of the free sulfathiazole in the blood, only 5 (27.7 per cent) showed any presence of the drug. Subjective and objective improvements were rapid, especially in cases of acute nasopharyngitis. The duration of the disease was decreased considerably. In 1 case of follicular tonsillitis the patient who had received treatment returned three days later with an incipient peritonsillar abscess, which was promptly aborted by sulfanilamide given orally and hot irrigations of the throat. Three patients with acute pharyngitis and coryza obtained subjective relief from their symptoms within three hours, but the disease subsequently ran the course of a typical catarrhal rhinosinusitis. In 2 cases of tonsillar ulceration due to Vincent's organisms no improvement was obtained. The possibility of systemic damage from the use of sulfathiazole is negligible with this method of treatment. The method is inexpensive and is easily carried out on ambulatory patients.

Staphylococcic Meningitis Recoveries Following Bacteriophage Therapy.—MacNeal and his collaborators were able to find records of only 48 acceptable examples of recovery from staphylococcic meningitis. During ten years of bacteriophage therapy of staphylococcic infections they recorded 11 recoveries from staphylococcic meningitis, of which 7 are considered acceptable as recoveries from diffuse cerebrospinal staphylococcic leptomeningitis. Two of the cases have been previously reported. One patient who apparently recovered from diffuse meningitis subsequently died after unsuccessful craniotomy for an abscess of the brain and is therefore omitted from the group of valid instances of recovery. A case of local cerebral meningitis and 1 of local cervical pachymeningitis with recovery are also not included in the group of diffuse meningitis. Recovery from staphylococcic meningitis may be achieved by skilful use of bacteriophage without other therapy. The authors recommend the use of a sulfonamide drug, preferably sulfathiazole or sulfapyridine, along with bacteriophage. Antitoxic serum may also be added to this therapeutic combination during the first week. Bacteriophage therapy should be continued long after apparent clinical recovery in order to prevent the development of dangerous sequelae, especially abscess of the brain.

Bulletin of Johns Hopkins Hospital, Baltimore

72:127-202 (March) 1943

*Treatment of Essential Hypertension by Sympathectomy: Report on 12 Patients Three to Seven Years Following Operation. J. Bordley 3d, M. Galdston and W. E. Dandy.—p. 127.
Constrictive Pericarditis Due to Bacterium Tularense: Report of Case and Review of Reported Cases of Pericarditis Occurring with Tularemia. B. V. Jager and J. C. Ransmeier.—p. 166.
Preparation and Properties of Bacteriologic Peptones: I. Enzymic Hydrolysates of Casein. E. Leifson.—p. 179.

Sympathectomy in Hypertension.—Bordley and his associates report the results of splanchnicectomy in the treatment of 12 patients with essential hypertension. Ten of these have been followed for three to seven years after the operation. Two died shortly after operation. The sole criterion for operation was the presence of incapacitating symptoms. In 3 patients a supradiaphragmatic splanchnicectomy (Peet operation) and in 9 an infradiaphragmatic splanchnicectomy (Adson-Craig operation) was performed. The level of arterial pressure was lowered for six to eighteen months in 4 of the 9 patients treated by the infradiaphragmatic operation and for four and one-half years in 1 of the 3 patients treated by the supradiaphragmatic operation. Symptomatic relief appeared to depend on lowered arterial pressure in 4 of 9 patients in whom it occurred. In 2 patients abnormal findings in the heart and eyegrounds regressed during the period of lowered arterial pressure and returned after the arterial pressure again rose. Return of arterial pressure to preoperative hypertensive levels was not associated with regeneration of sympathetic nerves supplying the lower extremities which were severed during the Adson-Craig operation.

Kansas Medical Society Journal, Topeka

44:73-108 (March) 1943

Fundamentals of Psychiatry: VI. Psychosexual Development. W. C. Menninger.—p. 73.
Acute Iritis, Acute Conjunctivitis, Acute Glaucoma and Their Differential Diagnosis. A. L. Pettis.—p. 78.

New York State Journal of Medicine, New York

43:481-576 (March 15) 1943

Rhabdomyosarcoma in Lower Urinary Tract. R. W. Hunt.—p. 513.
Transurethral Prostatectomy. W. A. Milner.—p. 517.
Summary of Endocrine Effects in Advanced Prostatic Cancer. C. Huggins.—p. 519.
Late Results Following Transurethral Prostatic Resection. L. M. Orr, P. R. Kundert and F. J. Pyle.—p. 521.
What's Wrong with Our School Health Service. H. H. Mitchell.—p. 527.
Ways to More Effective School Health Service. G. M. Wheatley.—p. 529.
Education and Health. E. C. Jessup.—p. 533.
Absorption of Carbon Dioxide from Anesthesia Apparatus. D. H. Batten.—p. 539.

Pennsylvania Medical Journal, Harrisburg

46:529-656 (March) 1943

Chronic Cholecystitis: Indications for Medical Treatment. D. Macdonald.—p. 543.
Panel Discussion on Intravenous Therapy. R. L. Haden, J. E. Rhoads, M. Strumia, L. Hollander and G. J. Thomas.—p. 549.
Points in Pathogenesis of Silicosis of Practical Importance in Its Diagnosis. S. R. Haythorn.—p. 561.
Résumé of Sulfonamide Drugs in Ophthalmology. E. B. Spaeth. —p. 566.
Pharmacy of More Recent Drugs. E. F. Kelly.—p. 569.
Treatment of Fractures of Long Bones by Open Operation. D. M. Headings.—p. 573.
Present Use of Protamine Zinc Insulin. R. Richardson.—p. 578.
Technic of Vaginal Medication: Clinical and Roentgen Study. A. E. Rakoff and S. L. Casper.—p. 582.
Management of Fractures of Tibia and Fibula. W. D. Griesemer. —p. 590.
Factors Contributory to Geriatric Nutrition. J. T. Freeman.—p. 595.
Further Observations on Prophylaxis and Treatment of Traumatic Wounds and Compound Fractures by Local Use of Sulfathiazole. G. C. Weil, D. W. Whitaker and D. O. Johnston.—p. 599.

Public Health Reports, Washington, D. C.

58:417-464 (March 12) 1943

Recommendations of Joint Committee on Rural Sanitation—Rural Sewage Disposal.—p. 417.
Giemsa Stain of Quite Constant Composition and Performance, Made in Laboratory from Eosin and Methylene Blue. R. D. Lillie.—p. 449.

58:465-504 (March 19) 1943

What's Past is Prologue: Academic Qualifications of Registered Nurses as Revealed by 1941 National Survey of Registered Nurses. Henrietta Landau.—p. 465.
Comparison of Rabbit and Horse Serums in Meningococcus Infections. Sara E. Branham.—p. 478.
Location and Movement of Physicians, 1923 and 1938—Age Distribution in Relation to County Characteristics. J. W. Mountin, E. H. Pennell and Virginia Nicolay.—p. 483.

58:505-540 (March 26) 1943

*Aqueous Base Yellow Fever Vaccine. M. V. Hargett, H. W. Burruss and A. Donovan.—p. 505.
*Experimental Chemotherapy of Burns and Shock: III. Effects of Systemic Therapy on Early Mortality. S. M. Rosenthal.—p. 513.
American and Australian Q Fevers: Persistence of Infectious Agents in Guinea Pig Tissues After Defervescence. R. R. Parker and E. A. Steinhaus.—p. 523.

Aqueous Base Yellow Fever Vaccine.—According to Hargett and his co-workers the preparation of aqueous base living yellow fever vaccine was undertaken by the United States Public Health Service in 1941. This vaccine is an aqueous extract of 10 to 11 day old chick embryos infected with the attenuated 17 D strain of yellow fever virus. It differs from the 17 D serum base vaccine extensively used in recent years in that it contains 75 per cent, rather than 10 to 40 per cent, embryo extract and no serum diluent. The extract is preserved by desiccation under high vacuum from the frozen state, with storage at subfreezing temperatures in an atmosphere of dry nitrogen. For administration the dried preparation is rehydrated and diluted 1:10 with isotonic solution of sodium chloride, with each recipient receiving 0.5 cc. subcutaneously. The increased virus content of the aqueous product as contrasted with the serum containing preparation insures that a greater quantity of virus is inoculated. This favors host immunization. In excess of 600,000 doses of the aqueous type vaccine have been released to date for general use without encountering unfavorable reactions. Of 28 individuals studied, all possessed specific virus neutralizing bodies several weeks after vaccination. Danger of vaccine contamination by serum containing pathogenic agents is eliminated by this new method of preparation.

Experimental Chemotherapy of Burns and Shock.—Rosenthal studied the effects of systemic therapy, employing a standardized procedure for the production of burns fatal to mice within forty-eight hours. He was concerned only with the early mortality and therefore limited his therapy to the first seven hours after the burn. He observed no benefit from epinephrine, posterior pituitary injection, adrenal cortex extract or desoxycorticosterone acetate injected subcutaneously. Sodium chloride by mouth or intraperitoneally caused a significant reduction in the mortality. Intravenous administration was less effective. Isotonic solution of sodium chloride by mouth was superior to hypertonic solutions. Potassium chloride caused an acceleration in the time of death, and when administered with sodium chloride it antagonized the effects of the latter. Calcium gluconate orally was without effect. Isotonic dextrose solutions orally showed slight therapeutic action. The administration of hypertonic dextrose solutions or water by mouth caused the animals to die faster than the controls. Sodium acetate, succinate, bicarbonate and lactate were as effective as sodium chloride. Mouse serum intravenously was slightly less active than equivalent volumes of 0.9 per cent sodium chloride orally. Little effect was observed from the intravenous administration of a hypertonic solution of human serum albumin.

Rocky Mountain Medical Journal, Denver

40:217-288 (April) 1943

Carbon Monoxide Asphyxia. A. G. Kammer and E. H. Carleton.—p. 234.
Cancer of Breast. C. F. Hegner.—p. 241.
Industrial Surgeon and Insurance Carrier. R. N. Gray.—p. 245.

Southern Medical Journaal, Birmingham, Ala.

36:247-320 (April) 1943

Electrophoretic and Kjeldahl Analysis of Protein in Nephritic Urine and Effect of Proteinuria on Human Kidney. S. S. Blackman Jr. and B. D. Davis.—p. 247.
*Prostatic Cancer: An Evaluation of Treatment by Castration. E. Rupel.—p. 251.
Referred Pelvic Pain. W. F. Mengert.—p. 256.
Cysts of Spleen. J. W. Snyder and P. R. Rezek.—p. 263.
Loeffler's Syndrome. J. H. Smith.—p. 269.
Dislocation of Proximal End of Fibula: Case Report. S. R. Terhune, S. B. Thompson and T. S. Eddleman.—p. 271.
Medical Aspects of Hiatal Hernia: Review of 65 Cases. W. H. Higgins.—p. 273.
Emaciation and Endocrine Dysfunction. D. L. Sexton.—p. 276.
Gastrointestinal Disorders as Seen in Army Station Hospital. I. J. Pincus.—p. 284.
Peptic Ulcer in Army. H. M. Thomas Jr.—p. 287.
Sulfonamide Therapy in Surgery. J. R. Veal and R. G. Klepser.—p. 292.
Experience of Johns Hopkins Hospital with Breech Presentation: Analysis of 1,444 Cases. W. T. Moore and P. P. Steptoe Jr.—p. 295.
Comparative Study of "Dilantin Sodium" and Phenobarbital in Negro Epileptics. S. B. McLendon.—p. 303.
Factors in Resistance to Tuberculosis as Revealed by Case Finding Program. L. W. Parr—p. 306.
Parinaud's Ocular Glandular Syndrome. F. H. McGovern.—p. 312.

Castration in Prostatic Cancer.—Rupel calls attention to the fact that the prostate shrinks following castration in malignant as well as in benign hyperplasia. These end results are caused by the elimination of androgenic substance normally released by the interstitial cells. Similar results may be obtained with estrogens. When the serum level of acid phosphatase fails to fall to normal after castration, we may suspect that some other foci are producing the enzyme or that the malignant process is of the undifferentiated type. Diethylstilbestrol could be utilized for the very aged and for those who refuse to submit to castration. Its use, however, is not without some risks. Administration of diethylstilbestrol in 1 mg. doses daily over a period of two months has produced distinct breast changes, pain and lumps, in 4 of 8 patients. The author excised the testes of 26 patients with prostatic cancer; 8 others received diethylstilbestrol. The symptoms of these patients varied from mild prostatism to intolerable pain, complete retention and continuous hemorrhage. With 1 exception, every patient had a definitely fixed, nodular, or flat prostate. X-ray studies of the bony pelvis, including the spine and upper portions of the femurs, were made on every patient. The King-Armstrong method was used for serum phosphatase determinations. The response to testicular excision has been the relief from pain, relief in bladder neck irritation and production of atrophy of prostatic cancer cells. Usually the prostatic atrophy becomes palpably noticeable in four months, reaches a state of fixed, smooth concavity in eight, and the gland disappears in a year. The patient has no pain, gets about well, may have some short "hot flashes," is not eunuchoid in appearance and is in good health.

Virginia Medical Monthly, Richmond

70:173-226 (April) 1943

Treatment of Mental Diseases Related to Involutional Period. D. C. Wilson.—p. 175.
Cardiodiaphragmatic Syndrome. W. B. Porter.—p. 179.
Some of the "Do's and Don'ts" in Treatment of Fractures: With Special Reference to Rural Practitioner Whose Burden and Responsibility will be Increased by Present Emergency. T. J. Hughes.—p. 187.
On Lacquer Dermatitis. W. T. Vaughan.—p. 193.
Effect of Castration on Serum Phosphatases in Case of Metastasizing Carcinoma of Prostate. L. D. Abbott Jr., G. W. James and J. T. Jarrett.—p. 195.
Benign and Malignant Lesions of Urachus: With Special Reference to Colloid Carcinoma of Bladder. M. L. Dreyfuss.—p. 200.
Further Experience with Tubal Division in Salpingitis. P. Jacobson.—p. 205.
Nonpenetrating Foreign Bodies of Eye. W. F. Hatcher.—p. 208.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

51:89-134 (March) 1943

Vesicovaginal Fistula. A. V. Pettit.—p. 89.
Genital Anomalies with Pregnancy. J. M. Ewer.—p. 94.
Failure in Induction of Labor. C. A. DePuy.—p. 102.
Work Imposed on Heart in Pregnancy and Labor. J. J. Sampson.—p. 107.
Fibroids in Pregnancy, Labor and Puerperium. E. M. Lazard.—p. 119.
Endometriosis. W. W. Pascoe.—p. 123.
Appliance for Colostomy Control. O. F. Lamson.—p. 127.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

18:1-64 (March) 1943

Studies in Anemias of Infancy and Early Childhood: Part XII. Regeneration Rate of Hemoglobin and Life Span of Erythrocytes in Normal and Pathologic Conditions. H. S. Baar and T. W. Lloyd.—p. 1.
Nutrient Enema. J. W. A. Mackenzie.—p. 22.
Absorption of Drugs from Rectum. J. W. A. Mackenzie.—p. 28.
Intrathoracic Cysts of Intestinal and Bronchial Structure. W. G. Wyllie and R. S. Pilcher.—p. 34.

British Medical Journal, London

1:435-466 (April 10) 1943

*Experience with Typing of Typhoid Bacilli by Means of Vi Bacteriophage. A. Felix.—p. 435.
Endemiologic Study of Bacterium Typhosum Type D4. W. H. Bradley.—p. 438.
Surgical Treatment of Osteomyelitis Due to Penetrating Wound. G. Perkins.—p. 441.
*Treatment of Scabies by Tetraethylthiuram Monosulfide. T. M. Clayton. p. 443.
Value of Vitamin B_1 in Prevention of Toxemia of Pregnancy. F. J. Browne.—p. 445.

1:467-496 (April 17) 1943

Strategy and Tactics in Research. F. M. R. Walshe.—p. 467.
Pathology of Closed Injuries of Chest. J. V. Wilson.—p. 470.
Outbreak of Epidemic Catarrhal Jaundice. L. R. L. Edwards.—p. 474.
Pediculosis Capitis and Intelligence in W. A. A. F. Recruits. H. R. Rollin.—p. 475.
Treatment of Malaria in England. A. Winfield.—p. 476.

Typing of Typhoid Bacilli by Means of Vi Bacteriophage.—During the period from 1940 to 1942, 440 strains of typhoid bacilli were examined by the Vi bacteriophage method of Craigie and Yen. Of 432 strains that were Vi forms 363 (84.1 per cent) were successfully typed, while 69 (15.9 per cent) were untypable or "imperfect" Vi forms. The remaining 8 strains, including 6 from chronic carriers, could not be typed because the cultures were O forms. Most of the strains belonged to 8 of Craigie's original phage types. In addition, 4 new Vi phage types were identified. The bacteriophage test is a reliable guide to the epidemiologic investigation of outbreaks or sporadic cases of typhoid. Its application greatly facilitates the detection of chronic carriers, especially of those responsible for sporadic cases in endemic areas.

Tetraethylthiuram Monosulfide in Scabies.—Clayton found that a 25 per cent emulsion of tetraethylthiuram had a curative effect in 11 out of 14 cases of severe and complicated scabies, the remaining 3 cases being probable reinfections. In 15 volunteers and in 18 patients the emulsion failed to produce dermatitis or irritation beyond a preliminary smarting in some severe cases. The preparation appears to have extremely beneficial results on some of the secondary concomitants of scabies. In 5 per cent aqueous solution it has proved curative in 93 consecutive cases and produced only mild dermatitis in 7 cases. It has proved to be a sarcopticide of potency against the human itch mite and is worthy of extended trial.

Edinburgh Medical Journal

50:129-192 (March) 1943

*Observations on Flexner Dysentery. W. A. Caldwell and S. W. Hardwick.—p. 129.
Reflex Vasodilatation in Surgery. J. R. Learmonth.—p. 140.
"Sciatica"—From Orthopedic Point of View. R. I. Stirling.—p. 155.
Idiopathic Aplastic Anemia: Report of 4 Cases. J. W. MacFarlane and J. P. Currie.—p. 171.
Clinical Trials of Pethidine. A. W. Branwood.—p. 177.

Flexner Dysentery.—Caldwell and Hardwick review observations on 357 cases of severe diarrhea or definite dysentery occurring in mental hospitals between 1940 and 1942. In November 1941 an improved technic was adopted in the collection of fecal specimens, and the desoxycholate citrate medium of Hynes was used in place of MacConkey's. As the result of these improved methods a high proportion of cases of diarrhea suspected of being dysentery (Flexner) have been bacteriologically confirmed. The majority of persons infected with Bacterium dysenteriae excrete the bacilli during convalescence, and the temporary carrier state may last for several weeks. Contacts may become infected and exhibit mild symptoms or none. Prophylactic inoculation with a B. dysenteriae vaccine has not prevented infection, but it may have modified the course of the disease in some instances. The following factors are of importance in the spread of the disease: (1) failure of the nursing staff from ignorance or from a mistaken sense of duty to report gastrointestinal symptoms; (2) the common temporary carrier state following infection; (3) the occurrence of "missed" cases, formes frustes or asymptomatic cases. Sulfanilylguanidine appears to be an effective antidysenteric agent. It probably shortens the course of the disease and appears to clear the stools of B. dysenteriae more rapidly than the sodium sulfate treatment. It is useful in cases of chronic diarrhea following dysenteric infection, suggesting that it may be an effective treatment of the chronic carrier.

Journal of Royal Army Medical Corps, London

80:51-114 (Feb.) 1943

Personal Impressions of Medical Services in Present War. P. H. Mitchiner.—p. 51.
Medical Experiences with the Ringrose Force in Abyssinia. R. J. McGill.—p. 58.
Notes on 4 Cases of Blackwater Fever Occurring in Southern Nigeria. E. P. N. Creagh.—p. 64.
Further Investigation of Night Vision Among Personnel of an A. A. Unit. B. St.J. Steadman.—p. 73.
Forward Medical Services of Red Army. E. M. Cowell.—p. 83.

Lancet, London

1:449-480 (April 10) 1943

*Chemotherapy by Blocking Bacterial Nutrients: Antistreptococcic Activity of Pantoyltaurine. H. McIlwain and F. Hawking.—p. 449.
Dyspepsia in the Army. L. C. Hill.—p. 452.
Vitamin C Intakes at Residential Home. L. J. Harris and Mamie Olliver.—p. 454.
Jaundice in Syphilitics Under Treatment: Possible Transmission of Virus. J. W. Bigger.—p. 457.
Effect of Coumarin and Dicoumarin Derivatives on Prothrombin Level. J. Lehmann.—p. 458.
Stricture of Small Bowel Following Strangulated Hernia. S. C. Raw.—p. 460.

Antistreptococcic Activity of Pantoyltaurine.—McIlwain and Hawking draw attention to the fact that the therapeutically successful level of sulfanilamide may or may not be inhibitory in vitro, according to the coincident concentrations of antagonistic compounds, of which p-aminobenzoate is the most important. This compound is more than a drug antagonist, since it is a substance essential to animals and to bacteria. The action of sulfanilamide depends on its preventing the micro-organism's use of the p-aminobenzoate, apparently by virtue of its structural similarity to p-aminobenzoate. It appeared possible that bacterial growth might be also prevented by compounds chemically related to other substances essential to bacteria such as pantothenate, which is present in the blood of animals. Several compounds structurally related to pantothenate were examined, and pantoyltaurine was the most actively antibacterial in vitro, preventing the growth of hemolytic streptococci when present in concentrations two hundred times those of the coincident pantothenate. Pantoyltaurine is a compound which was designed to inhibit growth of bacteria needing pantothenate by displacing it from the points at which it interacted with micro-organisms and so starving them of a substance essential for growth. Streptococcus hemolyticus was particularly sensitive to this action in vitro. Pantoyltaurine was rapidly excreted by rats, but the ratio of pantoyltaurine to pantothenate concentrations in their blood could be kept above the range of in vitro action for most of the day by frequent subcutaneous doses to which there was no intolerance. Rats so treated for four days were protected from approximately 10,000 lethal doses of a virulent strain of streptococcus and less completely from 1,000,000 lethal doses. Mice, whose blood pantothenate was much higher than that of the rat or of man, were not protected. Sulfonamide resistant streptococci and some strains of Corynebacterium diphtheriae are sensitive to pantoyltaurine. Since the concentration of pantothenate in human blood is slightly less than that in rat blood, somewhat lower levels would be necessary for therapeutic action in man. Practical applications to human therapy may be possible along these lines, but the main value of this work lies in its description of new methods for the discovery of chemotherapeutic compounds.

Medicina Española, Valencia

5:539-744 (Dec.) 1942. **Partial Index**

*New Treatment of Infantile Kala-Azar: Hexonate of Antimony in Oil Solution or Concentrated. Ramos Fernández, Sala Ginabreda and Sanjosé Capella.—p. 545.
Maternophobia: Neurosis of Great Demographic and Social Importance. A. Clavero Núñez.—p. 567.
Diet During Pregnancy. F. Bonilla and G. Alvarez-Ossorio.—p. 590.
*Intraperitoneal Hemorrhages Caused by Rupture of Corpus Luteum. J. Rincón Núñez and E. Oliva Priego.—p. 612.
Hypochloremia in Nurslings. A. Galdo.—p. 629.
Early Diagnosis of Cancer of Uterine Cervix. R. Horno Alcorta.—p. 666.
Treatment of Adnexitis by Anesthetic Block of Pelviperineal Plexus. L. Abad Colomer.—p. 680.

New Treatment of Kala-Azar in Children.—Neostibosan, the preparation most widely used at present, is, according to Ramos Fernández and his associates, difficult to preserve; it must be given intravenously, which constitutes a difficult technic to be employed for hospitalized children. The intramuscular injection often results in local intolerance, while some cases are resistant to the drug. The discovery of the hexonate of antimony (solustibosan) constituted an improvement. This substance is available in a 20 per cent oily solution or in a concentrated aqueous solution. The hexonates of antimony have a much lower toxicity than other preparations of antimony and are therefore better tolerated. The aqueous solution of the hexonates of antimony are rapidly eliminated from the organism, while the oily solution permits of slow absorption. The authors compute the total dose on the basis of 1 cc. per kilogram of body weight. The total dose is divided into five fractionated doses, which are injected intramuscularly on alternate days. The maximal total dose is 60 cc. and the maximal individual dose is 5 cc. For the concentrated solution the total dose per kilogram of body weight is 0.4 cc.; this is divided into ten separate doses, which are injected at twelve hour intervals. The maximum total dose is 24 cc. and the individual dose 2 cc. The authors present clinical histories of 7 children treated with the new preparation.

Intraperitoneal Hemorrhage Caused by Rupture of Corpus Luteum.—Rincón Núñez and Oliva Priego report the history of a woman aged 29 who was operated on for suspected appendicitis. The operation revealed an intraperitoneal hemorrhage which originated in a ruptured corpus luteum of the right ovary. Studies of serial sections excluded the existence of an ovarian pregnancy. Grave intraperitoneal hemorrhages of ovarian origin are comparatively rare. One author reports having seen only 3 cases in more than three thousand laparotomies. Infectious processes, intoxication from absorption of abortifacients, masturbation, coitus interruptus, myomas and uterine retroflexion have been suggested as possible causative factors. The quantity of blood in the peritoneal cavity varies between 200 and 500 cc. but as much as 1,500 and even 3,000 cc. has been reported. Microcystic degeneration of the ovaries, inflammation of the tubes, fibromatous uterus and fixed retroflexion are lesions often encountered. Some observers, particularly Forssner, maintain that these hemorrhages are invariably caused by ovarian pregnancy. To rule out this cause the extirpated ovary should always be subjected to microscopic study. In the case reported, as well as in some cases mentioned in the literature, the patients were virgins. This fact is important for the diagnosis. Symptoms of hemorrhage from ruptured corpus luteum are often mistaken for those of appendicitis or ectopic pregnancy.

6:1-124 (Jan.) 1943. **Partial Index**

*Onset of Labor and Stimulation of Uterine Contraction by Estrogen. A. Ferreira Gómez.—p. 23.
Lathyrism: Clinical Study. A. González Paracuellos.—p. 46.

Onset of Labor and Stimulation of Uterine Contraction.—Ferreira Gomez administered intramuscularly from 50,000 to 100,000 international units of estrogen to 20 women in a state of ruptured membranes without uterine contraction or with weak uterine contractions. The results were satisfactory with all patients given 100,000 international units and in 75 per cent of those given 50,000 units of the substance. In 1 case of a hydatid mole and in 1 case of retained dead fetus intramuscular injection of 300,000 international units of the substance caused the expulsion of the mole and of the retained fetus. The author recommends 100,000 international units as the proper dose to initiate labor or to stimulate uterine contraction when the fetus is alive. A smaller dose of the substance may fail, whereas a larger dose may inhibit secretion of milk.

Revista Médica Latino-Americana, Buenos Aires

28:233-270 (Jan.) 1943. **Partial Index**

*Gigantic Pleural Emphysematous Blebs: Seven Cases. E. S. Mazzei. p. 237.
Abortive Therapy of Furuncles and Anthrax. Edmundo Escomel.—p. 245.

Gigantic Pleural Emphysema.—Mazzei reports observations on 7 men between the ages of 30 and 62 years with gigantic emphysematous blebs of the pleura. The disease involved only the right lung of 4 and the right lung predominantly with mild involvement in the left one of 3. The clinical symptoms and the roentgenologic signs of all were typical. The disease of 1 was associated with pulmonary tuberculosis, of 2 with bronchial cancer and of 1 with arteriosclerosis of the pulmonary artery (Ayerza's disease). Necropsy was performed in 3 cases. The author believes that the disease is acquired. The most frequent symptom is dyspnea of the orthopneic type. Other symptoms are those of ordinary emphysema, spastic bronchitis and pneumothorax. The x-ray shadows of intrapulmonary emphysema of moderate size show up as intrapulmonary ring shadows, whereas those of gigantic emphysema occupy the entire hemithorax and are similar to those of chronic pneumothorax. The differential diagnosis is made on the following signs: (1) The size of the x-ray shadow may increase after an attack of dyspnea and diminish after administration of bronchodilating drugs; (2) the collection of air has no proper wall in the roentgenogram. It is delimited by the visceral pleura and by a layer of collapsed pulmonary tissue; (3) iodized oil administered through the bronchi passes to the emphysema cavity only exceptionally; (4) local infection and suppuration are extremely rare. The course of the disease depends on the degree of the intracavitary air pressure, which is related to the degree of bronchial obstruction. Rupture of emphysema leads to formation of pneumothorax. Bronchodilating drugs, especially ephedrine and aminophylline, are indicated to prevent respiratory insufficiency. Removal of emphysemal air by means of repeated puncture is indicated in cases of gigantic emphysema with increased internal air pressure and threatening respiratory insufficiency.

Semana Médica, Buenos Aires

50:121-162 (Jan. 21) 1943. **Partial Index**

Functions of Hypothalamus. F. Vidal.—p. 121.
"Benign" Auricular Fibrillation. M. Joselevich and P. G. Zwaig.—p. 130.
*Treatment of Incomplete Abortion. V. Marino Donato.—p. 144.
Erythrosedimentation in Pulmonary Tuberculosis. I. Natin and B. Rapaportt.—p. 152.

Treatment of Incomplete Abortion.—Marino Donato reviews observations on 1,936 incomplete abortions treated in the maternity ward of the Hospital Juan F. Salaberry in the course of sixteen years. Authors advocating active treatment regard the product of conception when retained in the uterine cavity as a culture medium for micro-organisms and see danger in the postponement of the evacuation of the uterus. At the author's clinic treatment consists in bed rest, an ice bag to the lower part of the abdomen and quinine in doses of 0.5 Gm. every hour until three have been taken. An hour after the administration of the last tablet, hypophysin is injected subcutaneously. In some cases cardiac and general stimulants are added. If the uterus is not evacuated within several days an active intervention is instituted. Between 1936 and 1941, medical treatment was used in more than 76 per cent of the afebrile cases of incomplete abortion, whereas preceding this period curettage had been employed in over 85 per cent. The superiority of the conservative over the active treatment in the febrile cases has been established beyond a doubt. The fever usually subsides in a relatively short time and spontaneous evacuation of the product of conception takes place within a few days. Afebrile incomplete abortion should be treated in the same manner.

Book Notices

Diseases of the Breast: Diagnosis, Pathology, Treatment. By Charles F. Geschickter, M.A., M.D., Lieut. Commander, Medical Corps, United States Naval Reserve. With a special section on treatment in collaboration with Murray M. Copeland, A.B., M.D., F.A.C.S., Instructor in Surgery, Johns Hopkins Medical School, Baltimore. Fabrikoid. Price, $10. Pp. 829, with 593 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1943.

This is a comprehensive book on the diseases of the breast, written in the light of newer knowledge of structure, function and method. It is based to a large extent on observations and experiments of the author himself. The topics of the first part are the development and physiology of the breast, and methods of diagnosis of mammary diseases. Then is described the breast in pregnancy and lactation with special reference to their influence on mammary lesions, particularly carcinoma and mastitis. Chronic cystic mastitis and noncancerous mammary tumors are discussed in the third and fourth parts respectively. The fifth part, devoted to all phases of mammary cancer except treatment, is the longest part (255 pages). The treatment of mammary tumors is described in part six. In part seven are reviewed the author's work on experimental cystic mastitis and on mammary tumors.

There are many tabulations of the results of analysis of clinical and pathologic material, some of which are of little value because the social and other conditions represented by the material are not known. The effort to simplify complex problems by means of diagrams sometimes results in confusion. Most of the illustrations are original but vary greatly in quality. The magnification of the photomicrographs is not given.

The word cancer is used as synonymous with carcinoma. This is contrary to general usage, e. g. American Society for Cancer Research, National Cancer Institute, American Society for the Control of Cancer, the British Empire Cancer Campaign and *Cancer Research*.

The book contains statements and conclusions with formidable implications but inadequate proof. Thus it is stated that in certain cases of adenosis or Schimmelbusch disease the lesions disappear after pregnancy. If this potentially cancerous lesion —as many authorities believe Schimmelbusch disease to be— actually disappears after pregnancy, the fact would be of the greatest importance but unfortunately proof of such disappearance is lacking. The author has included many cases without microscopic proof; hence the nature of many lesions remains in doubt, and it is probable that patients whose breasts improved after pregnancy were suffering from physiologic states which regress spontaneously and not from Schimmelbusch disease.

The author arrives at the important conclusion that no etiologic relationship exists between chronic cystic mastitis and carcinoma and thus places himself in direct contradiction with an increasing body of opinion (Ewing, McCarthy, Konjetzny, Semb, Cheatle, Cutler and others). Warren's recent statistical studies also are opposed to the author's conclusions. Cheatle's extensive studies of the breast by means of whole serial sections are opposed to the conclusions of Geschickter, who did not examine his specimens by Cheatle's method. The fallacies in the author's presentation of precancerous lesions are obvious for the following reasons: 1. Large numbers of cases (as high as 70 per cent in some categories) are without microscopic proof under circumstances in which an accurate clinical differentiation between such conditions as "mastodynia," "adenosis" and so-called chronic cystic mastitis is not possible. 2. The average duration of the follow-up (10.2 years) is inadequate and by no means excludes the later development of cancer in a certain proportion of the patients. 3. Many patients who are reported well after local excision of the lesion and even after mastectomy are cited as proof of the innocent nature of the lesion, but obviously many such cases are examples of surgical cures of potentially cancerous lesions. 4. Under the term chronic cystic mastitis the author includes lesions which are physiologic and certainly innocent with lesions such as Schimmelbusch disease, which are distinctly pathologic and menacing. To group such a variety of lesions in unknown proportions and often without microscopic proof in a statistical analysis is unsound, and to draw the conclusion from such a study that these various conditions are not etiologically related to cancer is obviously unwarranted. Before accepting the conclusion that cysts, papillomas and Schimmelbusch disease are innocent lesions, the physician should weigh the author's evidence against the formidable body of opinion which holds the opposite view.

The pathologic classification of mammary cancer adds further confusion in a field already hopelessly confused. Meaningless names are given to microscopic appearances of fragments of tissue from the breast when it is well established by means of whole serial sections that several or all of such appearances may be present in the same breast.

In his experimental work the author produced lesions in the breast of the rat which seem to be comparable morphologically with lesions in the human breast, but he has oversimplified the mechanism of formation of the lesions and assumes an analogy between the two with unwarranted positiveness. The suggested endocrine treatment of various lesions of the human breast is without adequate basis. Thus on page 64 the author admits that testosterone does not act in the same manner in man as in the rat, yet throughout the book he draws conclusions that the effects of testosterone are similar in the rat and in the human female breast and suggests endocrine therapy on this basis.

Preventive Inoculation. By W. Powell Phillips, M.R.C.S., L.R.C.P., D.P.H., Deputy Medical Officer of Health, Cardiff, and C. Woodroffe Anderson, M.B., Ch.B., D.P.H., Assistant Medical Officer of Health, Cardiff. With introduction by J. Greenwood Wilson, M.D., F.R.C.P., D.P.H., Medical Officer of Health, Cardiff. Cloth. Price, 6s. Pp. 74. London: "The Practitioner" in conjunction with Eyre and Spottiswoode, 1942.

This little volume is the seventh of a series of handbooks published by the *Practitioner* and designed as practical guides for the busy physician. The first part of the book discusses in elementary style the basic principles of infection and immunity and their application in the prophylaxis of disease. There follows a simple statement of technic of injection and apparatus required. In the remaining two thirds of the volume the authors describe briefly immunization against diphtheria, tetanus, scarlet fever, typhoid and paratyphoid fevers, whooping cough, measles, influenza and the common cold. A final chapter describes immunization against other diseases, a few lines being given respectively to tuberculosis, plague, typhus fever, cholera, dysentery, yellow fever, poliomyelitis, cerebrospinal meningitis, anthrax and pneumococcic pneumonia.

This is strictly a handbook for the practitioner who has no time to read the standard textbooks of preventive medicine or bacteriology. The discussions of the various procedures are too brief and elementary to satisfy the needs of the medical student who must be more thoroughly trained in basic principles.

The American reader will note references to antigens not used in this country, such as toxoid-antitoxin floccules and the new alcohol killed typhoid vaccine of Felix. He will wonder at the suggestion that women should be given smaller doses of typhoid vaccine than should men. It is not clear why the authors chose to ignore the typhoid studies of Siler and his colleagues at the Army Medical School. Similarly it is surprising to note the statement that for yellow fever immunization one should inject a small quantity of immune human serum a few hours before administering the vaccine. It may be wondered why the authors fail to mention the newer yellow fever vaccines in general use for over five years.

Burns, Shock, Wound Healing and Vascular Injuries. Prepared under the auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Military Surgical Manuals, Volume V. Cloth. Price, $2.50. Pp. 272, with illustrations. Philadelphia & London: W. B. Saunders Company, 1943.

This is the fifth of the series of six military surgical manuals and covers the management of the several wartime emergencies indicated in the title. Despite the variety of the material covered, the general standard of the book is high and this volume compares favorably with the other volumes in the series. In fact, the subjects covered, especially burns and shock, repre-

sent especially important aspects of present day military medicine. Each of the four chief sections of the book represents a discrete condition and should be considered separately.

The section on burns, covering 103 pages, divides the discussion into general management, local care, early plastic care and late plastic care. In addition there is a good short but incomplete and overcondensed account of the management of burns received in chemical warfare by Dr. David P. Barr. In this chapter only three of the gases are considered and no mention is made of phosphorus, magnesium or other burns due to metals, which are so important in the present war. The first chapter, on the general management of burns, by Dr. Henry N. Harkins, rightly emphasizes the especial importance of plasma administration in the control of burn shock. Drs. Roy D. McClure and Conrad R. Lam discuss the local care of burns and cite the advantages and limitations of the tanning, pressure dressings, sulfadiazine spray and other methods. Drs. McClure and Harkins in a third chapter from the Henry Ford Hospital group discuss the early plastic treatment and care of granulating surfaces. They cite the importance of early skin grafting and point out the particular military applicability of the Padgett-Hood dermatome for this purpose. The next chapter, on the late plastic care, by Dr. James B. Brown, represents one of the best accounts of the subject in the literature and is remarkable for the excellence of the illustrations.

The second section, on shock, is divided into three chapters: mechanism, by Dr. Norman E. Freeman, prevention and treatment, by Dr. Alfred Blalock, and fluid replacement therapy, by Dr. Max M. Strumia. In a space of 67 pages these authors have written what is, in the reviewer's opinion, the best account on shock extant. The only possible criticism of this section is that it is not graced by the presence of a bibliography. Since the military surgical manuals will undoubtedly be studied at base hospitals in this country as well as at the front, it seems that a brief bibliography would be desirable.

The short (17 pages) third section, on wound healing, by Dr. Allen O. Whipple, is beyond criticism.

The fourth section, on vascular injuries, is written jointly by the subcommittee of the National Research Council on that subject, composed of Dr. John Homans, chairman, and Drs. Arthur W. Allen, Geza de Takats, Daniel C. Elkin and Walter G. Maddock. The material occupies 64 pages and considers control of hemorrhage, injuries to arteries, diseases of arteries and diseases of veins. The use of heparin in vascular surgery is cited, but the book was apparently written too early to describe some of the most recent developments in arterial anastomosis. The section on injuries to arteries in special locations includes a very helpful account of the anastomoses in each location with excellent diagrams. The role of sympathetic block in vascular surgery is adequately presented along with several illustrations of great merit. Finally, the ever practical subject of varicose veins is competently delineated.

This book is to be recommended not only to military surgeons but to those in civil life as well, both practitioners and medical students.

Etapas de la vida médico-patricia del doctor Juan Madera, procer de Mayo. Por Luciano Abeille. Second edition. Paper. Pp. 324, with illustrations. Buenos Aires, 1942.

For the historian concerned with the rise of modern medicine in South America this book will be an invaluable document. From it we learn about the life of Dr. Juan Madera, born in Buenos Aires in 1782, physician and patriot, head of the first medical military unit and of the first institution of sanitary police of Argentina, first professor of therapeutics, physician of the Hospital for Foundlings, member of the first Academy of Medicine of Buenos Aires. However, his most important contribution was the introduction of jennerian prophylaxis in his country, for which he was appointed first "administrator of the vaccinia." The virus was imported from Rio de Janeiro in 1805 by three slaves previously inoculated, and the practice of vaccination spread rapidly. Madero propagated the virus through cows and was himself responsible for isolating a strain of cowpox in his country. The Englishmen whom he fought in his youth as a soldier and a military surgeon later rewarded his efforts by nominating him honorary member of the London Vaccine Institution. Abeille's book can hardly be called a biography. It is rather a complete compilation of documents—many of them direct reproductions of the originals—concerned with the manifold episodes of Madero's picturesque life. With these abundant data the reader is left free to speculate at will on the man and on his surroundings; and the sight of the beautiful, romantic painting of Dr. Madero himself reproduced on the first page of the book is certainly an invitation to do so.

Food Poisoning. By G. M. Dack, Ph.D., M.D., Associate Professor of Bacteriology, the University of Chicago. Cloth. Price, $2. Pp. 138. Chicago: University of Chicago Press; London: Cambridge University Press, 1943.

This volume carries on the tradition begun in the University of Chicago, Department of Bacteriology, by Prof. E. O. Jordan, who devoted himself particularly to the salmonella type of infection. In the present work the various chapters cover chemical poisoning, poisonous plants and animals, botulism, staphylococcus food poisoning, salmonella, streptococci and other bacteria. The final chapter relates to infections which must be differentiated from food poisoning, such as the dysenteries and trichinosis. The work is succinct, accurate and up to date, offering in brief scope what every doctor should know on this subject. The American people preserve immense amounts of food; at least fifteen million families do some home canning. The hazards and the standards are fully elucidated in this book.

Diccionario de términos y expresiones hematológicas. Por el Dr. Leopoldo Cea. Paper. Pp. 355. San Salvador, El Salvador, C. A.: Imprenta Nacional, 1941.

In this dictionary the author has collected the terms associated with hematology, providing for each a definition as well as some brief notes regarding etymology. More than a thousand words are included, which is an indication of the rapid rise of our knowledge of hematology in recent years. One would have expected a reference to the sedimentation test, which, however, does not appear. The names of a few leading workers in the field are included, but many an important investigator is omitted.

Twenty-First Hospital Yearbook: 1943 Hospital Purchasing File, Directory of Hospital Products, Manufacturers' Catalogs, Editorial Reference Section. Twenty-First edition. Cloth. Price, $2.50. Pp. 1,023, with illustrations. Chicago: Modern Hospital Publishing Co., Inc., 1943.

The contents of this useful book include the catalogues and advertisements of many sources of supply for practically everything used in the hospital. The manufacturers' catalogues are classified under clinical and scientific, general furnishings, food service, laundry and construction. An editorial section includes timely articles on wartime activities, the hospital pharmacy, other administrative data, and a preview of postwar hospital and medical planning.

Influencia del equilibrio ácido-básico en la reactibilidad cutánea: Estudio experimental en hombres. Por Arturo Manrique Mom. Tesis, Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 50, with 11 illustrations. Buenos Aires: Imprenta de Alfredo Frascoli, 1942.

The author describes experiments carried out in man tending to prove that the skin reactions brought about by local applications of dinitrochlorobenzene are enhanced in patients subjected to an alkalosis producing diet, and diminished in patients under an acidosis inducing diet. Work leading to analogous conclusions by previous workers and contributions on allied topics are thoroughly reviewed.

El bocio tóxico. Por José Alberto Caeiro. Paper. Pp. 149, with 52 illustrations. Buenos Aires, 1942.

An excellent short monograph on goiter, the surgical angle being specially emphasized. Yet, in the preliminary chapters, the anatomy and physiology of the thyroid gland are summarily but clearly described and the clinical symptoms in the different forms of glandular dysfunction are dealt with in some detail. For this reason the book will be advantageously read both by the medical student and the general practitioner as well as by the specialized surgeon. The photomicrographs are excellent.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PHYSICAL EFFICIENCY AND TOBACCO SMOKING

To the Editor:—**Is there any scientific basis for the popular belief that smoking causes "shortwindedness"? If so, what are the physiologic mechanisms involved?**

Lieutenant (MC), U.S.N.R.

ANSWER.—A lowering of physical efficiency has been reported during and immediately after the use of tobacco in a number of studies, which have been summarized in the extensive reviews Tobacco and Physical Efficiency, by M. V. O'Shea (New York, Macmillan Company, 1923) and Tobacco and Human Efficiency, by Schrumpf-Pierron (New York, Paul B. Hoeber, 1927). Diminution in muscular capacity as measured with the ergograph was reported by W. P. Lombard (*J. Physiol.* **13**:1, 1892) and many, though not all, later workers, and fatigue was reported to commence earlier and the output of work diminish (Hough: *Am. J. Physiol.* **5**:240, 1901 and Baumberger, J. P.; Perry, E. E., and Martin, E. G.: *J. Indust. Hyg.* **3**:1, 1921). But it is particularly the "shortwindedness" and lowering of respiratory reserve that has led most coaches and physical directors to insist that smoking be restricted, at least during the season of competition (Pack, F. J.: *Pop. Sc. Month.* **81**:336, 1912). More than a third of the subjects of a blindfold test reported "shortness of breath" which they ascribed to the smoke (Bogen, Emil: The Composition of Cigarets and Cigaret Smoke, THE JOURNAL, Oct. 12, 1929, p. 1110).

The carbon monoxide in tobacco smoke is insufficient to exert much effect in this regard (Hanson, H. B., and Hastings, A. B.: The Effect of Smoking on the Carbon Monoxide Content of Blood, *ibid.*, May 13, 1933, p. 1481). The various irritating substances in tobacco smoke contribute to pharyngeal inflammation and an annoying cough more than to actual decrease in vital capacity (Bogen, Emil: *California & West. Med.* **45**:342 [Oct.] 1936). Most of the shortness of breath reported by smokers appears to be due to the effect of the nicotine in the smoke on the heart and the circulation (Parkinson, J., and Koefod, H.: *Lancet* **2**:232 [Aug. 18] 1917). An accelerated pulse beat, an exaggerated sinus arrhythmia and the occurrence of premature contractions may result from the action of the nicotine on the innervation of the heart. The more alarming pain on exertion, or "tobacco angina pectoris," in heavy smokers has been ascribed to coronary contraction resulting from nicotine (Vaquez, H.: Diseases of the Heart, translation, Philadelphia, W. B. Saunders Company, 1924). This has been questioned by others (White, P. D., and Sharber, Trimble: Tobacco, Alcohol and Angina Pectoris, THE JOURNAL, March 3, 1934, p. 655) and the resulting coronary insufficiency sharply distinguished from true coronary occlusion (Masters, A. M.; Carroll, H. H., and Andrews, Cecil: *U. S. Nav. M. Bull.* **40**:810 [Oct.] 1942).

That excessive smoking interferes with athletic prowess and may bring on shortness of breath is generally admitted (Fisher, G. J., and Berry, Elmer: The Physical Effects of Smoking, 1932). The differences, though distinct, are not great enough to erase all differences in native ability, and so we find that some athletes have actually succeeded in attaining distinction in spite of the persistent use of tobacco, although their number is much less than might be inferred from advertisements. Although a number of physiologic mechanisms have been presented to account for the total effect observed, their relative importance and true relationship to the entire phenomenon may still repay further investigation.

REPEATED ADMINISTRATION OF TETANUS ANTITOXIN

To the Editor:—**In The Journal, April 3, 1943, page 1157, in the editorial comment on "Tetanus in the Middle East," it is stated that "each wounded man is given a dose of 3,000 international units of tetanus antitoxin. Further weekly doses of the antitoxin are given to the patients who have not been actively immunized." Is it safe to give further doses of antitoxin to patients at a time when reaction may be expected to occur? Could a second skin test be depended on to warn of danger?**

M.D., Pennsylvania.

ANSWER.—Injection of antitoxin at intervals of not more than seven days is regarded as safe. Induced serum disease, as a rule, does not manifest itself earlier than nine days or so after injection of serum. The object of injecting tetanus antitoxin under the circumstances is to prevent tetanus, and because tetanus is almost always fatal one is justified in trying to prevent it to take some small risk of causing a form of serum disease which is not dangerous to life. Repeated injections at weekly intervals are necessary to maintain a satisfactory antitoxin level in the patient. A positive skin test would, of course, indicate established sensitivity to the antitoxin.

CONCENTRATES OF VITAMIN D AND ARTERIOSCLEROSIS

To the Editor:—**A visiting physician expressed the opinion that vitamin D, if taken in concentrated form, can lead to arteriosclerosis even in infants. I am considerably perturbed because when volunteering my services to the Army Medical Corps the month of Pearl Harbor I was turned down, the reason given being early arteriosclerosis of my lower extremities as demonstrated by x-rays. I was then 47. Furthermore, my children are aged 21, 19 and 16 years and 16 months respectively. For many years I have prescribed cod liver oil, usually in concentrated form, for a number of patients, and all the members of my family have taken it faithfully. Since plain and fancy preparations of the oil itself are quite messy and unpleasant and since the concentrated forms of cod liver oil are quite the reverse, please inform me authoritatively whether it is unwise to use the concentrated form of cod liver oil.**

M.D., Kentucky.

ANSWER.—Extremely large doses of activated sterols or of fish liver oils may produce calcification of the soft tissues, including the aorta and arteries in experimental animals and in human subjects. This effect is associated with the "calcemic principle" of the products and is not necessarily proportional to their antirachitic activity and has nothing to do with vitamin A activity. The effect is accompanied by other manifestations of toxicity: anorexia, vomiting and loss of weight.

The doses which have produced abnormal calcification have been about five thousand times those recommended for prophylaxis of rickets in normal animals; but doses only about a hundred times the prophylactic dose may produce symptoms in persons with renal insufficiency.

There is no evidence that concentrates of cod liver oil are more toxic than equivalent doses of the oil, and no evidence that ordinary prophylactic doses of either will produce arteriosclerosis.

SEVERE CHRONIC CONSTIPATION

To the Editor:—**A woman who suffers from chronic constipation, sometimes to the extent of going five and six days without a bowel movement, is most desirous of finding a more normal and natural method of handling her problem than resorting to the use of laxatives and enemas. The constipation seems to be of the atonic type, as the only laxative which seems to be of any value is a combination of aromatic cascara and physostigmine. The movement is usually small in amount, hard and dehydrated and dark brown. Please inform me if there are any exercises or calisthenics which would increase the tone of the colon. Any other suggestions you have will be appreciated.**

Lieutenant, M. C., A. U. S.

ANSWER.—A person suffering from chronic constipation of this type should have a basal metabolic test to see whether or not hypothyroidism is not an important etiologic factor. If it is present, ½ to 1 grain (0.03 to 0.06 Gm.) of thyroid three times a day may relieve the constipation. If the basal metabolic rate is within limits of normal, the constipation is probably on a psychogenic basis. I would suggest that the patient consult a neuropsychiatrist for this hypothetic approach. Most functional disturbances of the colon are of neuropsychiatric origin.

BRONCHOPNEUMONIA AS CAUSE OF DEATH IN EARLY INFANCY

To the Editor:—**In the following cases bronchopneumonia was given on the death certificate as the only cause of death. The age and the date of death were: 1, 1 day, June 22, 1942; 2, 1 day, July 8; 3, 1 day, August 16; 4, 3 days, October 17; 5, 27 days, October 12. These questions automatically arise: 1. Is it possible for bronchopneumonia to be the primary cause of death in the first week of life? 2. Is it possible for intrauterine bronchopneumonia to develop in the last month of pregnancy with no signs of symptoms of pneumonia in the mother?**

William C. Buss, M.D., Bakersfield, Calif.

ANSWER.—1. It is possible for bronchopneumonia to be the primary cause of death in the first week of life. A number of such cases occur both in premature and in full term infants in whom the larynx and trachea have been traumatized by the passage of a tracheal catheter and in others as the result of aspiration pneumonia. The difficulty in making a diagnosis of bronchopneumonia rather than pneumonia alone naturally is open to question.

2. It is certainly possible for intrauterine pneumonia to develop in the last month of pregnancy without the mother giving signs of circulatory infection, from which source it must have derived. On the whole, this could be considered an uncommon cause.

UNCLASSIFIED GLYCOSURIA OR DIABETES

To the Editor:—A man aged 35 first had sugar in his urine fifteen years ago. Since that time he has consistently had sugar in his urine specimens. His general health has been excellent. His laboratory findings were as follows:

Dextrose (100 Gm.) Tolerance Test

Time	Specific Gravity	Sugar in Urine		Sugar in Blood
		Qualitative	Per Cent	Mg./100 Cc.
0	1.031	.....	0.3	105
15 minutes	.....	.....	...	147
30 minutes	.....	+++	0.7	133
45 minutes	.....	.....	...	183
60 minutes	1.040	++++	2.0	187
75 minutes	.....	.....	...	175
90 minutes	.....	.....	...	175
105 minutes	.....	.....	...	179
120 minutes	1.040	++++	2.25	172
150 minutes	.....	.....	...	161
180 minutes	.....	++++	1.1	94

Should this patient be on a restricted diet or should the presence of sugar in the urine be ignored?

M.D., Connecticut.

ANSWER.—Further information is necessary before one should attempt a diagnosis.

1. Was the dextrose tolerance test carried out after an all night fast or at least five hours or more after food? 2. Was the patient free from infection as proved by temperatures taken at the beginning and end of the test? It is assumed that he did not have chronic arthritis or hyperthyroidism. 3. What method was used for the estimation of the blood sugar? 4. Are the data based on capillary blood from the ear or finger or on venous blood? Values for capillary blood are higher than for venous blood taken simultaneously save in the fasting state. An example follows:

	Fasting	½ Hr.	2 Hrs.	4 Hrs.	5 Hrs.
Capillary	95	204	150	98	80
Venous	91	156	120	76	74

It is a safe rule not to diagnose diabetes by capillary blood after food unless the value reaches 200 mg. or more in contrast to 170 mg. by venous blood. If the bloods in this case were capillary bloods, the patient would not be considered diabetic, but by venous blood the diagnosis would be diabetes.

Tests of the urine all indicated the presence of sugar even though certain blood sugar values were normal. It is unjustifiable, however, to assume that true renal glycosuria is present, because it is not stated whether the bladder had been emptied an hour or more before the first test. The 0.3 per cent sugar in the fasting specimen might have passed into the bladder several hours previously, and likewise at 180 minutes the 1.1 per cent sugar in the urine with a blood sugar of 94 mg. would not prove renal glycosuria, because only one hour before the urine contained 2.25 per cent sugar and the sugar might have been passed into the bladder after that.

Irrespective of the diagnosis, whether unclassified glycosuria or diabetes, it is obvious that such a patient should be watched for life, although it is the exception for borderline cases such as this to change their status. The patient should not expose himself to diabetes by a gain in weight or by indulgence in a rich carbohydrate diet or conversely by imposition of a low carbohydrate diet.

PERFORATION OF DRUM MEMBRANE AND EXPOSURE TO NOISE

To the Editor:—It is my impression as an industrial physician that a person with chronic active otitis media with perforation of the tympanum and moderate drainage should not be permitted to be exposed to repeated loud noises such as one might encounter in a riveting operation. It is also my impression that a person with arrested otitis media with a perforation of the drum but no discharge but with a history of discharge within the past five years should not be placed on riveting. I am unable, however, to find a reference that would substantiate this opinion. I should like an opinion on whether such restriction on employment is reasonable.

M.D., New Jersey.

ANSWER.—Perforation of the drum membrane with or without discharge would not make an ear more susceptible to acoustic trauma from riveting but would rather protect the ear, since the impairment of sound conduction resulting from such a perforation or otitis media diminishes the volume of sound reaching the nerve of hearing and acts exactly the same as a tight plug in the ear canal. Therefore there is no reason to restrict the employment of such persons or to avoid riveting.

SYPHILIS AND NEPHRITIS

To the Editor:—A white man aged 32 was rejected by the army in January 1942 because of a positive Wassermann reaction. Two subsequent serologic tests were positive. He admitted exposure but had no knowledge of symptoms or signs of syphilis. In 1934 he was sick for a few days with the grip. In 1936 he had a sore throat for three days; the doctor consulted suggested tonsillectomy. In 1937 he passed an examination for life insurance. The only complaint is slight backache. Physical examination discloses nothing abnormal. The age, height and weight ratios are correct. The blood pressure is 120/78. The cardiovascular system, the reflexes, the abdomen, the lymph nodes (except in the cervical region) and the spinal fluid are normal. A blood count showed 7,100 white blood cells and 77 per cent polymorphonuclears; the hemoglobin was 80 per cent (Sahli). The phenolsulfonphthalein response was excellent. The prostate was normal. There was slight to 4 plus albumin in the urine and the specific gravity range was from 1.006 to 1.024. In the beginning, red blood cells were found and a few hyaline and granular casts. Two dead teeth were extracted; later on tonsillectomy was performed because the tonsils looked suspicious. A consultant urologist found the genitourinary tract normal. A small polypus of the bladder was cauterized, and since then the red cells have almost disappeared but albumin and infrequent granular casts are still found. A series of bismuth subsalicylate and mapharsen, small doses of each, including potassium iodide, has been given for some months. Full details relative to diet, rest and hygiene have been planned. The patient looks well and has no complaint. The question arises whether to continue with small doses of the drugs or, in view of the urinary findings, to forego specific treatment and wait for the kidneys to improve? Will you please advise me with regard to this case?

M.D., Virginia.

ANSWER.—The onset of an acute nephritis in a patient who has early syphilis is an extremely rare complication. Such a nephritis is evidenced by varying degrees of edema and the presence in the urine of large amounts of albumin and small numbers of casts and blood cells. The edema and urinary findings usually disappear rapidly following the administration of small amounts of arsphenamine and bismuth.

Syphilis of the kidney as a complication of late syphilis is practically unknown; at least it is impossible to differentiate it from the common types of nephritis as seen occasionally in cases of syphilis.

In the case under discussion evidence is not available, apparently, to determine the duration of the syphilis, and the basis for the diagnosis of syphilis appears to be on only the serologic evidence. It is not stated whether the serologic reports were all strong positives or were of a questionable positive nature, and thus the question is raised as to the authenticity of the diagnosis of syphilis. If the diagnosis is still justified by repeated strongly positive serologic reports obtained from different laboratories on the same specimen of blood, it would then seem advisable to treat the patient for syphilis and nephritis simultaneously. The use of mapharsen and bismuth compounds in smaller doses than usually given a young man would be justified. The spinal fluid should be examined to determine whether there is need for intensifying the treatment, if and when possible. Such dietetic and other measures as are indicated for the nephritis should be employed concurrently. Under such a program urinary findings of the type described usually disappear; however, the patient must be kept under close surveillance to make certain that the kidney damage is not extensive and of a permanent nature.

REMOVAL OF FISH HOOKS

To the Editor:—I was much interested to read in Queries and Minor Notes Department in The Journal, May 22, 1943, page 268, the discussion about fish hooks. My office and house are surrounded by wharves, beaches and cliffs, all giving access to the Atlantic Ocean, and amateurs come from New England's industrial area to heave fish hooks, ashore and afloat. On the theory of chance, a certain number of hooks end up in human flesh, usually in *persona propria* but frequently in *alter*. The presence of the hook is a psychologic as well as a physical hazard, and everybody goes to work to extract it. There are two schools of thought—the "push 'em through" school and the "pull 'em out" school. How many of these subscribers to either of these technics are successful, I do not know because I never see them. I believe they are few or none. The ones I see are those who are in shock as the result of one of their misguided enthusiasms, with the hook still in. I should like to recommend a little 2 per cent procaine hydrochloride alongside the shaft, a rubber band for a tourniquet, an incision parallel to the shaft with a little scraping of the blade along the barb, and out comes the hook with a wide open, cleanly incised wound behind to treat according to one's fancy and the latest style. These wounds never get infected, never fail to heal nicely and the patients are greatly surprised. With all these questionnaires as to specialty, I have often thought of answering "fish hooks." It certainly would be no more silly than some of the others! But I think one would have to take a trip to the Grand Banks really to qualify as a specialist. If Kipling was right, the technic is the same minus the anesthesia but not the "push 'em" or "pull 'em" business—that would be too heroic for even the "Captains Courageous."

Edward M. Cook, M.D., York Harbor, Maine.